FEDERAL SUPPORT FOR SCIENCE AND ENGINEERING EDUCATION: EFFECT ON OUTPUT OF SCIENTISTS AND ENGINEERS 1945-1985

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TABLE OF CONTENTS

Highlights and Summary 1

Indirect Support for College Students 6

- The Effect of Inflation 6
- The Effect of R&D Expenditures and Unemployment 6
- Outlays for Education 7
  - Department of Education Grants and Loans 8
  - National Science Foundation 8
- Federal S/E Obligations to Universities and Colleges 11
  - By Agency 11
  - By Field 12

Federal Programs of Direct Support for Students 12

- The GI Bill 12
- Other Legislation 15

Graduates 15

- Bachelor's Graduates 15
  - Field 16
  - Women 16
- PhD Degrees 17
  - Women 18
  - U.S. Citizens 19
    - Men 19
    - Minorities 20

Graduate Students 20

- The Data 20
- Enrollment and Federal Support 21
  - Men and Women 22
  - Foreign Students 23
- Non Federal Support 24
- Type of Support 25
  - Foreign Students 25
    - Type of Support 25
    - Source of Support 25
  - Fellowships and Traineeships 26
  - Research Associatships and Assistantships 26
  - Teaching Assistantships 27
- Source of Support 27
- Relationship of Federal Support and S/E PhD 27
- Direct Federal Support by Agency and Field 28

PhD Recipients - Support for Graduate Study 30

- Source of Primary Support 30
- Primary Federal Support by Field 32
- Primary Federal Support by Agency 33
- All Federal Support 33

Postdoctorates 34

Bibliography of Data Sources 35

Index of Tables and Graphs 38

HIGHLIGHTS AND SUMMARY

U.S. Outlays for Education

- There was a tripling (in constant dollars) in federal support for pre-college education, including vocational education from 1965 to 1967 , and, with rises and dips in the line, support remained fairly steady to 1986.

- Support for higher education also tripled between 1965 and 1968, before leveling off to 1964, and then starting a steady increase to 1981. Between 1981 and 1983, constant dollar funds for higher education dropped by 23%, and then recovered 12% of the drop by 1985.

R&D Expenditures

- Increased R&D expenditures raise employment and lower unemployment for scientists and engineers. High unemployment decreases undergraduate enrollment in these fields, but may increase graduate enrollment. Conversely, high employment increases undergraduate enrollment but may decrease graduate enrollment.

Grants and Loans

- Constant dollar amounts for grants in the Department of Education increased from $100 million to $4.5 billion from 1965 to 1985. Loans rose from $493 million to $8.3 billion during those two decades. Guaranteed student loans make up 59% of all student aid; grants are 35%.

NSF Support for S/E Education

- In constant dollars, NSF support for pre-college education rose from half a million dollars in 1955 to 3 million in 1956, 35 million in 1957 and 135 million in 1959. After peaking at $182.5 million in 1964, NSF support moved steadily downward to 3.8 million by 1982. Cause and effect relationships between the drop in support level and the dropping scores of American students on national and international science and math tests cannot be documented by these data, but a connection seems apparent.

NSF support for undergraduate education followed a similar pattern, peaking in 1965, and dropping steadily for the next 17 years. S/E bachelor's degrees rose rapidly through the four year lag period to 1969, and then essentially leveled off.

At the graduate level, NSF support in constant dollars peaked in 1967, with S/E PhD awards growing rapidly and steadily for another four years, before starting downward again. Degrees stabilized after that time, despite the continuing drop in NSF support.

- While there is no proof that NSF support was the specific cause of an increase in degrees at either level, up to the time that NSF support started downward; nor that the drop was the direct cause of the leveling off of S/E degrees, even as degrees in other fields continued their steady rise, the inference of a relationship is inescapable.

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- The high level of NSF support for pre-college education, and the excitement about science generated by NSF during the post-Sputnik era, may be a major contributor to the rapid increase in S/E bachelors degrees for the decade beginning in 1964. PhDs, beginning about 1969 would be made up of these same students, and the small bulge in S/E degrees from 1969 to 1975 indicates a possible relationship.

The G. I. Bill

- When the total number of degrees rises, the number of S/E degrees rises, although not always in direct proportion. Thus, federal support that brings students into college - largely indirect support - will increase the number of S/E graduates.

- The major source of direct federal support that brought large numbers of students to college is the GI Bill in its various versions - and particularly those for veterans of WWII and Vietnam. Veterans not only increased the pool of college educated individuals, they increased the pool of those with S/E bachelor's degrees. The dropoff in Vietvets after 1976 is coincident with a dropoff in the number of male S/E graduates. Total S/E graduates held steady because of an increase in the number of women, plus an enormous rise in Pell grants and other education support, including guaranteed loans.

Other Legislation Affecting S/E Output

Legislation Without Funding Support for S/E

- Other enabling legislation, even without funding attached, affected educational output. For example, Title IX of the Education Amendments of 1972 opened college doors to women in ways that had never occurred before, and the increase in women baccalaureate graduates was accompanied by a relatively smaller increase in women S/E baccalaureate graduates and later in women doctorates and S/E doctorates.

- The activation of a military draft during the Vietnam era substantially increased the proportion of male high school graduates who entered college, with proportionate increases in all and S/E bachelor's degrees.

Research and Development

- Research and Development funding have had both direct and indirect effects on educational output in science and engineering. Some R&D funds provided to educational institutions were utilized for direct support of graduate students in the form of research assistantships. Some of it opened up job opportunities in S/E research which in turn persuaded students to enter graduate study in these fields, whether or not direct support was available. A student's perception of the current job market, at the time he/she begins any program of study for a degree, appears to be a major indicator of enrollment and field choice.

- In constant 1982 dollars, federal R&D funds rose substantially and steadily from 1954 to 1966, before leveling off for three years and then dropping back to a new level until 1981. Total R&D funding followed a similar pattern until 1975, and then moved steadily upward through a decade.

Both federal and non-federal funding for R&D increased job opportunities, and thus interest among potential graduate students. The increase in S/E PhDs from 1950-1969 echoes the increase in constant dollars of federal R&D funding. The drop in R&D funding after 1968 parallels the stable pattern of S/E PhD awards beginning a year later.

Graduate Students, Federal Support, and PhD Awards

- There appears to be very little relationship between the number of S/E graduate students with direct federal support, and the number enrolled full time in science and engineering graduate study. Direct support to graduate students, though varying in dollar amount, shows almost no variation over two decades in the number of students supported. Graduate enrollment, on the other hand, has risen substantially over the past ten years.

  The rising enrollment data, without a commensurate increase in PhD awards, suggests that graduate students without steady support may drop out before achieving the PhD, while those with federal support are more likely to complete the degree. Examination of the primary source of support for PhD recipients verifies this.

- Graduate enrollment is at least in part dependent on baccalaureate graduations. The increase in S/E graduate enrollment that occurred beginning in 1974 reflects the increase in S/E bachelor's graduates up to that time. It also (and perhaps more importantly) reflects the increasing numbers of women and foreign students within the S/E graduate student population.

- The increasing number of women enrolled in S/E graduate study since the early seventies particularly affects the field output, with more degree awards being in the life and social sciences and fewer in the physical sciences and engineering. However, the higher federal support level in the life sciences also probably affects field choice.

- Choice of graduate field within S/E may be influenced by available federal support for a particular field, although available data cannot prove this relationship. In the life sciences, enrollment rises with federal support, and drops when federal support drops. Large numbers of PhDs occur in fields with higher proportionate support (life and social sciences) and small numbers match small support levels in math/computer sciences.

- For S/E students, institutional support is the major source of support, followed in order by self support, federal support and "other" support. For men, the institution provides support for the highest number, but for women, self support was highest until 1981, when institutional support became predominant.

- Among full time S/E graduate students, men are more likely than women to have federal support and to have institutional support. Women are more likely than men to be self-supporting. On the other hand, among PhD recipients over the past nine years who are U.S. citizens, women are somewhat more likely to have had primary federal support and far less likely to have had institutional support than is true either for U.S. men or for foreign PhD recipients. Women PhD recipients, like women graduate students, are much more likely than men to have provided their own support and to have relied on loans.

- At least for women, there is a direct relationship between federal support and PhD completion. A higher proportion of U.S. women S/E PhD recipients over the past decade than of U.S. men list primary federal support in graduate school - the opposite of the situation for graduate students. Completion appears to be related to support. Because women S/E PhD recipients (about 40%) are much less likely than men (about 60%) to have had primary support from their university, federal support was a vital component to a higher proportion of the women than of the men.

- For both sexes, there appears to be a definite and direct relationship between the number of graduate students with federal support and the number of PhD awards. Since 1970, S/E PhD degrees have remained essentially constant at approximately one fourth of the total number of S/E graduate students with federal support, just as the number supported has remained essentially constant. However, smaller proportions of PhD recipients each year from 1977 indicate primary federal support, and the drop occurs across all broad fields.

More foreign students earn S/E PhDs each year, and they also receive some federal support, both directly and via their institutions. Foreign graduates are less likely to have had direct federal support than are U.S. PhDs of either sex.

- The relationship of PhD output and federal field support varies. In engineering, output decreased slightly despite some slight increase in federal support over the past decade. Support for students in the life sciences rose much faster than PhD output, although the drop in support after 1980 already is reflected in the PhD awards. In math and computer sciences, the abrupt drop in federal support after 1969 is reflected beginning one year later in doctorate output. The drop in physical science support from 1969 is reflected beginning in 1972, and the slow increase after 1973 shows in PhD awards when support peaks in 1979-81. Psychology degrees show an opposite relationship to support, but degrees in the social sciences start dropping at the same time support is dropping.

- Almost a third of graduate students had fellowships and traineeships until 1971, with the remainder about equally supported by research assistantships, teaching assistantships and "other" types of support. However, beginning in 1971, fellowship/traineeship support dropped steadily, replaced by "other" support, including self support. About 16% have had fellowships since 1971, and 40-45% of students across time have had research and teaching assistantships in approximately equal proportions.

- Students with federal support were more likely to have fellow/traineeships until 1972, when research asistantships became predominant. Fellowships and traineeships have declined, both in number and proportion, among students with federal support, while research assistantships have increased, and "other" types of federal support have remained steady since 1974. Few teaching assistants have direct federal support.

- By agency, the departments of HHS and ED (previously combined as HEW) are the largest supporters of S/E graduate students. Within this large category, NIH provides major support, but that support has been dropping since 1979. NSF supports the next highest number, followed by DOD.

- Agency support tends to concentrate in particular fields. DOD supports principally engineers, plus some physical scientists. HHS support (of which about half is from NIH) goes principally to life scientists. NSF support is highest in the physical sciences, followed by engineering and life sciences. Some students in math or computer science, psychology, and the social sciences also are supported by NSF.

- For each broad field, federal support comes principally from one or two agencies: in engineering, DOD and NSF; in the life sciences, social sciences, and psychology, HHS (including NIH); in mathematics, DOD and NSF; and in the physical sciences, NSF.

- AEC and NASA provided support for 1,500-3,000 students each from 1969-1972. No data is available after 1972.

- Because direct federal support is provided on a competitive basis to the best S/E students, federal support must certainly affect the quality of output in a positive way.

Race and Sex of U.S. Citizens Earning S/E Doctorates

- Among U.S. citizens, the number of men earning S/E PhDs has declined steadily from 1975 to 1985, while the number of women has increased at an equally steady rate. The total, however, is smaller in 1985 than in 1975.

- White men earned 79% of S/E PhDs in 1975, but only 64% in 1985.

- Although Asians are 8.4% of employed doctoral scientists and engineers in the U.S. in 1985, Asian American citizens have earned only 2.3% of all S/E doctorates awarded to U.S. citizens over the past decade. The high representation of Asians in the doctoral workforce is the result of immigration, often following receipt of a PhD from an American university.

- Despite affirmative action, the number of U. S. black men earning S/E PhDs has decreased steadily for a decade. An increase in the number of black women earning such degrees does not make up the difference. From 1975-1979, black men earned 949 S/E doctorates, compared with 790 in the next five years. For black women, the number has risen from 508 to 700 over the five year time spans. Over the decade, blacks have earned only 2.2% of S/E PhDs awarded to U.S. citizens, compared with their 12% representation in the U.S. population.

- The numbers of American Indians and Hispanics earning S/E PhDs has increased slowly over the decade, but remains well below their proportion of the U.S. population.

- Women have increased their proportion of S/E doctoral awards from 18% in 1975 to 32% of U.S. citizens in 1985.

Postdoctorates

- The number of postdoctoral scientists and engineers in academic institutions has increased fairly steadily since the mid-sixties. Approximately 70% of these positions are supported by federal funds.

INDIRECT SUPPORT FOR COLLEGE STUDENTS

Indirect support for students includes all of the many federal programs in support of higher education, and of course also for programs in support of pre-college education which prepare students for college.

For most of these programs, it is not possible to separate out the support for science/engineering education from the general support for education. In other instances, such as support from the National Science Foundation, all education support, both direct and indirect, is for science and engineering education, and much of the support for activities other than education also indirectly supports S/E education.

Some of the legislation affecting college students, including Title IX of the Education Amendments of 1972 and the Civil Rights Act of 1964, did not include funds for higher education, but opened the doors to women and to minority students on an equal basis with white males. The regular and steady increase in the enrollment and graduation of women at both the undergraduate and graduate levels, both in science and engineering and in all other fields, bears a very direct relationship to the passage of Title IX. The impact for minorities is less obvious in terms of numbers of students and graduates, but obviously had an effect. The Selective Service Act of 1963 also had a direct bearing on the number of college students enrolled, although in this case the law acted more as a stick than as a carrot.

The Effect of Inflation

Beginning in 1965, prices began a steady and rapid annual increase, slowing only slightly by the mid-1980s. Because of this, all dollar data in this analysis have been corrected to a base year of 1982 using the GNP implicit price deflator. We recognize that this is an average rate of inflation over many sectors of the economy, and, if anything, will tend to understate the rate of inflation in S/E R&D and universities. In both of these sectors, labor costs are predominant and plant and equipment very specialized. These factors tend to be expensive and inflation in these sectors may have outpaced the averages. There are no accurate measures of inflation for this part of the economy.

The Effect of Unemployment

Unemployment has a dual and opposite effect on graduate and undergraduate enrollments. When unemployment is high, students at the undergraduate level tend to choose fields with lower unemployment rates, thus decreasing undergraduate enrollment in a field with higher unemployment. Graduate enrollment in that field tends to rise, as students "wait out" the slump by improving their credentials. High employment (and low unemployment) in a baccalaureate field, such as engineering, increases undergraduates but decreases graduate enrollment.

The data on unemployment rates of engineers appears to be highly erratic (probably because of small sample size and other data collection methods). However, the peaks of unemployment occur when R&D spending has slowed down, and coincide with falling undergraduate enrollments and rising graduate enrollments. The unemployment troughs are coincident with either annual increases or peaks in total R&D spending. They also mark high enrollments at the undergraduate level, and a low graduate enrollment level.

There is, however, an apparent correlation between the amount of federal R&D spending and the output of Ph.D. scientists and engineers.

Outlays for Education

Total outlays for education, across all agencies, rose very rapidly between 1966 and 1968. Then they generally stabilized for a decade, rising fast again from 1979 to 1981. Since 1982, they have fallen back to their late-1970s level.

However, this trend masks two very different trends. The 1965-68 increase was led primarily by spending for elementary, secondary and vocational education, while the rise from 1978-80 is a result of the acceleration of an increase in spending for higher education that began in 1974. Both categories have fallen since 1980, with elementary, secondary and vocational education falling at a faster rate than higher education. Spending is up in the past two years.

Overall outlays for education since 1962 have not been well correlated either with increases in GNP or in R&D spending. Educational spending in the aggregate has been on a long term increase, registering a slight reversal only during the early Reagan years. GNP, and particularly R&D spending have shown greater fluctuations.

Department of Education Grants and Loans

Direct student aid, without regard to field, has been in the form of grants, loans, and guaranteed loans. Grants include state supported incentive grants, work-study grants, supplementary education opportunity grants, and Pell grants (BEOG). In constant 1982 dollars, grants make up about one third of total grant and loan aid. Within the grant funding, constant dollar funding for Pell grants represents about three fourths of all grant money since 1975. Prior to 1975, work-study grants predominated, but the constant dollar amounts were low. Funding for Pell grants has continued to rise, reaching $3.4 billion in constant dollars in 1986.

Loans include Perkins loans and guaranteed loans, with the former making up about 10% of the total loan funding. Like Pell grants, guaranteed student loans have climbed rapidly since 1965, reaching a total of $7.6 billion in 1985. Unlike Pell grants, however, the student loans are repayable, so that the ultimate government cost for these loans is much less.

In constant dollars, guaranteed student loans have represented more than half of all direct aid to students since 1981. Loans (both Perkins and guaranteed) rose to their highest peak of $8.5 billion in 1981. The amount dropped back the following year to $6.5 billion, but has been climbing since that time, to $8.3 billion in 1985.

The Department of Education supports both undergraduate and graduate aid for students. Graduate aid is in the form of loans, work-study, and fellowships. Total graduate aid peaked in 1979 at $268.1 million in constant dollars, following a fairly steady rise from 1974. That figure was $184 million in 1985. Not only fellowships, but also work-study and loan amounts for graduate students have dropped since 1979.

National Science Foundation

NSF educational spending has shown wide swings over a 35 year period. In the post-Sputnik era of 1958-68, the agency's educational support grew in all areas from virtually zero to more than $350 million annually. This spending was shared by all types of educational institutions, but the precollege support accounted for the biggest growth and share until the mid and late sixties, when college and graduate educational support became the predominant focus.

The significant interest in pre-college science and math education generated during this period led NSF and others to believe that S/E

bachelor's and graduate degrees would continue to rise significantly. In 1963, NSF projected a total of 383,000 S/E bachelor's degrees in 1980 - representing 9.25% of all bachelor's graduates. Bachelor's graduates were projected at 26% of the 4,142,000 22 year olds for that year. This might well have occurred had college enrollment of 22 year olds remained at its high Viet Nam draft-induced level, and if support levels for pre-college science and math education had continued to be high. However, the actual number of S/E bachelor's degrees awarded in 1980 was only 292,000 - 24% of 22-year-olds and 76% of the number predicted 17 years earlier (NSF 64-2, p. 53).

The NSF projection for earned doctorates in 1980 was for a total of 93,050 in all fields combined, including 36,800 in science and engineering. This figure, based on the population of 28 year olds, also proved to be far higher than the actual 16,500 S/E PhDs awarded (Ibid. p. 55).

Thirteen years later, in 1976, NSF again projected S/E degrees, this time to 1985. S/E bachelor's degrees were projected as 375,700 in 1980 - still far higher than the actual number turned out to be. These 1976 projections were by sex, and the projection for women was 117,200, compared with an actual 106,000; while the projection for men was 227,500, compared with an actual 186,000. Obviously, the large reduction in the proportion of men from the appropriate age group who entered and completed college after 1970 when the draft ended was not foreseen. Even for women, the projection was 10.5% above the actual outcome (NSF 76-301, p. 28).

At the doctorate level, NSF projections made in 1976 were based on first time enrollment for advanced degrees in S/E fields seven years earlier. This led to a probable projection of 17,300 S/E doctorates in 1980 - only a little above the 16,500 actual degrees awarded (Ibid, p.31).

The effect of reduced support for education from NSF on the lesser degree attainment cannot be ascertained, but it appears reasonable to suppose that continued emphasis on science and mathematics in the elementary grades, such as occurred during the post-Sputnik period might have resulted in a substantial increase in the number of S/E degrees actually awarded in the ensuing years. It almost certainly would have increased the general science literacy of students at all levels.

The drop in NSF support for education from 1968 to 1973 was abrupt and substantial. The decrease continued at a lower pace until, by 1982, NSF precollege support was virtually zero, and support to other types of educational institutions was less than $20 million per year in constant 1982

dollars, down from a peak of $210 million in 1967 and 1968. There has been a recent increase in all NSF educational support, with the greatest share once again going to precollege institutions. The 1986 total for education is $68.7 million.

There appears to be little direct relationship between NSF precollege support and the number of BS degrees in S/E - or else the relationship is hidden by all the other intervening influences.

However, it is possible to speculate that the high level of NSF support for pre-college education, and the excitement about science generated by NSF during the post-Sputnik era, may be a major contributor to the rapid increase in S/E bachelors degrees for the decade beginning in 1964. Students from elementary school through high school were affected by the NSF programs. PhDs, beginning about 1969 would be made up of these same students, and the small bulge in S/E PhD degrees from 1969 to 1975 indicates a possible relationship.

There may well be an increase in quality of S/E graduates that results from the precollege investment, but the data cannot prove it.

While there is no proof that NSF support was the specific cause of an increase in degrees at any level, up to the time that NSF support started downward; nor that the drop in NSF support for education was the direct cause of the leveling off of S/E degrees, even as degrees in other fields continued their steady rise, the inference of a relationship seems inescapable.

It is interesting to note, and these data do not explain, why there is an apparent inverse relationship to total outlays for education in the U.S. and the pattern of NSF science and engineering education outlays. It can perhaps be explained solely on policy decisions related to NSF and its missions, and has no direct bearing on overall education policy in the U.S.

NSF science and engineering education outlays do appear to be highly related to the production of S/E PhDs during the 1960s. However, since 1968, when NSF spending for education started its long drop to 1980 when it amounted to almost zero, the number of PhDs remained almost constant. The number of graduate students supported by NSF also has remained fairly steady since 1973 at 8500-9500 per year, after a drop from 14,000 in 1970. Further, the number supported in each field has remained in approximately the same proportion since 1969. This may mean that quality of output among presumably the best students, who are supported by NSF, has been protected, although quantity has not been strongly affected.

Ph.D degree changes by field during this period of steady S/E PhD output can probably be explained in part by changing field and support levels of other agencies, particularly NIH. It may also reflect the number of foreign students getting S/E PhDs, and an increasing number of women within the PhD population as well as a changing mixture of support from NSF type fellowships to R&D projects that support research assistantships.

Federal S/E Obligations to Universities and Colleges

In constant 1982 dollars, total obligations to universities and colleges for science and engineering have been on a steady but slow upward trend since 1963, when this time series begins. Significantly, the number of fellowships has fallen steadily from a 1967 peak, while R&D support shows an increasing growth trend, particularly in the 1975-79 and 1983-85 time periods.

R&D obligations, in constant 1982 dollars, have doubled in the 22 years of this data series. The effect on higher education obviously is an important one, but the proportion of R&D funding that provides direct support to students is not known.

By Agency

The overwhelming share of academic support for science and engineering - 49.2% over a 23 year span -is from HHS, primarily the NIH. [Throughout this report, data labeled "HHS" also includes the old HEW and the new Department of Education unless otherwise noted]. Support has fluctuated over the years, but generally around a mean of approximately $3 billion per year, or an average $2,665.6 million in constant 1982 dollars. Of the other agencies, most have been relatively constant in their academic support. The DOD is the one exception, having reduced support from 1963-1975, followed by a steady rise in support from 1975 to 1985. NSF provided 16.3% of the federal support over the 23 years, DOD 12.1%, DOE 5.2% and NASA 4.7%. Other agencies combined provided 12.5% of the total.

The vast majority of support from all of the agencies except USDA is for R&D. In USDA, about half is for R&D, and the remainder for "Other S/E Activities" not including R&D plant, facilities, or general support for science and engineering. The amount of federal R&D funds provided to colleges and universities that is used for direct support of students is not known.

In constant dollars, HHS again provided almost half (47.3) of all R&D funds to colleges and universities. DOD is the source of 16.1%, NSF 15.3%, DOE 6.3% and NASA 5.5% over the 23 year period.

Even in constant dollars, total R&D support increased steadily from 1963 through 1985. HHS shows a relatively steady increase during this period, while support from the other agencies fluctuates up and down, with a generally upward trend.

Field

The life sciences got more than half (51.8%) of all the federal R&D funds obligated to colleges and universities over the 14 year period from 1971 to 1985. Physical sciences (13.7%) and engineering (12.9%) were the next largest recipients, with the environmental sciences trailing at 8.8%, the social sciences at 4.7% and psychology, math and computer sciences at about 2% each.

The constant 1982 dollar obligations for the life sciences rise steadily throughout the period, while support for R&D in the other fields fluctuates up and down. Among the EMP fields, engineering climbed from third place to first in 1978, surpassing the physical sciences. Federal R&D obligations for environmental sciences have held relatively steady, while those for mathematics and computer science have been low throught the period. Federal R&D support for the computer sciences started up in 1982 and has continued to rise through 1985.

Except to note the preponderance of field support for the life sciences, which may in turn be reflected in the rising numbers of PhDs in the life sciences, the data do not indicate any obvious relationships between academic R&D obligations and the output of scientists and engineers.

FEDERAL PROGRAMS OF DIRECT SUPPORT FOR STUDENTS

The GI Bill

The largest program of direct support to college students has been the **Serviceman's Readjustment Act**, both following World War II, and through the subsequent post-war periods. Data from the Veterans Administration on the number of college students supported by the various GI Bills does not begin until 1949, when the number of college students being supported may already have passed its peak, although total cost of all direct benefits for veterans, including educational benefits, peaked in that year. However, in 1949, more than 1.2 million students were in college under the GI Bill at an average cost/person of $892/year in current dollars ($3,798 in constant 1982 dollars).

Both the numbers of students and the cost/student dropped steadily through 1952, when the numbers increased again following the Korean war. In both current and constant 1982 dollars, costs/veteran for Korean war veterans were lower than for WWII veterans, but started up again with the numbers of veterans following the Viet Nam war in 1967. College support for Vietnam veterans peaked in 1976. Costs per student under the most recent GI Bill are about $2,000/year in constant 1982 dollars.

It is a surprise to many people [including me] that twice as many veterans of the Vietnam conflict utilized their GI Bill to go to college as did veterans of World War II. Following WWII, 2,230,000 veterans used the GI bill for college - 14.4% of all veterans of that war. 1,213,000 Korean veterans, 22.0% of all veterans, used their GI Bill for college; and 734,861 veterans went to college on the GI Bill during the "Peace" period prior to Vietnam. However, the GI Bill was used for college by 4,122,607 veterans of Vietnam - 45.1% of all Vietvets. The extensive rise in the proportion of veterans utilizing the college provisions of the GI Bill following these three wartime periods as well as the increase in the cost/student for GI Bill support increased the cost of this educational provision for veterans enormously. It is no surprise then that current members of the armed forces must put part of their much higher pay into their college fund in order to earn additional support from the nation.

The GI Bill provided direct support for both undergraduate and graduate students, regardless of field. The number of science and engineering graduates whose college training was supported by the various GI Bills is unknown. However, since the majority of all male students graduating in 1945-1952 were veterans, it is likely that a majority of all S/E bachelor's graduates during those years were supported by the GI Bill, since most of the graduates were male. This large group of people, now retired or nearing retirement, included many who went on to graduate school and completed doctorates sometime during the fifties.

The Vietnam period increased college enrollments and graduates both during the war, when many male students sought student deferment, and afterward, when Vietnam veterans swelled the ranks of students. We have no data on degree attainment among enrolled Vietvets (or among veterans from other conflicts), but veterans who completed a bachelor's degree would be among the bachelor's graduates from 1968 or so through about 1980. The drop in bachelor's and S/E bachelor's degrees awarded to men, beginning in

1975, almost certainly would have been considerably larger without the Vietnam veterans, since their numbers peaked in 1976. The dropoff in Vietvets after 1976 did not result in a drop in the number of bachelor's degrees, because by this time, the number of women graduating had increased the pool, Pell grants and other education support, including guaranteed loans, had risen enormously, and some combination of these events was sufficient to make up, but not increase, the numbers resulting from the loss of veterans.

The number of Vietvets who utilized the GI Bill as a primary source of support for their S/E PhD in 1978 was 282 (including 7 women) - representing three percent of all U.S. male S/E PhDs reporting primary source of support for that year. The number and percentage dropped consistently in the following years, to 43 (including 3 women) or 0.9% of U.S. male S/E PhD recipients in 1985 (NRC DRF special tabulations).

For several years preceeding the influx of Vietvets into the nation's colleges, the Vietnam conflict increased college enrollments significantly from 1963-1970 because of the draft. It is not possible to establish the exact numerical effect of the draft during the Vietnam war as an incentive to college enrollment, but the effect is known to be large because a higher proportion of male high school graduates went to college during the period of the Vietnam draft (1963-1970) than ever before or since that time. There may have been an even greater increase in S/E enrollment, because throughout most of the period (until April 23, 1970 when the lottery system was instituted), an occupational deferment was available for S/E graduates after their student deferment ended. Additionally, since deferment also was available for graduate study, the proportion of those who earned bachelor's degrees in science and engineering and continued on in graduate school also was higher than at any time before or since.

Another factor that makes it difficult to determine the effect of either the Vietnam Draft or the Vietnam GI Bill on S/E degrees is that this period also coincides with a large increase in the number of women in college, and a general recognition of a college degree as important for a far higher proportion of young people than had previously been the case. Finally, the cause and effect relationships of the GI Bill and the draft on the enrollment of students in science and engineering are difficult to distinguish because of a significant increase in R&D spending during this same period.

Additional legislation which provided direct support to students includes:

- The **National Cancer Institute Act of 1937** established the Public Health Service fellowship program - the first of its type. Fellowship programs later were provided through NSF, NIH, AEC, USDA, HHS and its predecessors, and DOD.
- The **National Defense Education Act of 1958** included fellowships and loans. Data available on direct support for graduate students through NDEA extends only from 1969 through 1973. Support was moving down during those years, but no data have been found for the period from 1959-1969 where most of that direct support probably came. It is not possible to separate NDEA loans and fellowships in the available data.
- The **Comprehensive Health Manpower Training Act of 1971** increased and expanded provisions for training by amending title VII of the Public Health Service Act. Administered through HHS.

Many of the "Other HHS" programs that include direct support for graduate students were established through the **Education Amendments of 1972, 1974, 1976, 1978.**

GRADUATES

The number of degree awards in science and engineering has doubled since 1950 at the bachelor's level, is 3.5 times greater at the master's level, and 4.4 times greater at the doctorate level. The largest growth occurred between 1965 and 1975, at the bachelor's level; between 1960 and 1972 at the master's and Ph.D. levels. Since 1972, there is almost no growth in the number of higher degree awards, and at the Ph.D. level, S/E degrees are lower than in the early seventies. The growth in master's degrees in S/E fields has generally continued after bachelor's degrees and PhDs have levelled off. This probably results more from an increase in professional credentialing requirements in all fields than an increase in support levels, because S/E master's degrees, as a percent of all master's degrees, continued to drop during the years (1966-83) that the total number of S/E master's degrees is rising.

Bachelor's Graduates

Except for the GI Bills, there has been and is little or no direct federal support for individual undergraduate students. Loans, whether federally

guaranteed or not, have enabled many students to choose to go to college, but cannot rank as an inducement with other types of support that are not individually repayable. Pell Grants have contributed to some portion of undergraduate students, but the numbers are not known.

The number of bachelor's graduates in science and engineering has increased, just as the total number of college graduates has increased over the period 1950-1984. However, the proportion of college graduates who earn degrees in science or engineering has remained remarkably stable at 28-32 percent throughout that period. The numerical increase that has occurred is due principally to the increasing number of women earning bachelor's degrees, and thus, S/E degrees.

Field

Within the S/E fields, the number of graduates in the social sciences increased far faster from 1960 than was true in other fields, peaking in 1974, before dropping off again. Life sciences also show a steady increase until 1977, before dropping back. Engineering dropped in the early fifties and again from 1973 to 1977, but rose steadily from 1976 to 1984 - largely as a result of the excellent job market for this field. Spurred by the increase in computer science degrees, the math/cs degrees increased through most of the three decades. However, degrees in the physical and environmental sciences have remained fairly steady throughout.

Women

The number of women earning bachelor's degrees in science and engineering has increased steadily since the early sixties, as has the number of women earning bachelor's degrees in all fields. They now earn half of all baccalaureates and 32% of S/E baccalaureates.

As a percent of all S/E bachelor's graduates, women have climbed in every field, but first and most in the social and life sciences, next in computer and math sciences and finally in engineering. However, as a proportion of all women bachelor's graduates, those who choose engineering still represent only about two percent of the total women graduates.

The number of women earning S/E bachelor's degrees peaked in 1974 in the social/behavioral sciences, in 1980 in the life sciences and in 1982 in the physical sciences. The number has continued to rise through 1985 in math/computer sciences and in engineering. However, in 1986, the number of

women earning BS degrees in engineering was lower than in 1985. Thus, both the proportionate and the actual increase in the number of women earning bachelor's degrees in S/E fields has ended.

PhD Degrees

The number of S/E PhDs awarded quadrupled from 1950 to 1970, but from 1970 onward, the total has remained very constant, despite a continuing increase in the number of bachelor's graduates, and in the graduate school age group. Both declining levels of direct support and a relatively higher level of unemployment among PhDs in the early 1970s than had been true in the past probably contribute to the decreasing proportion of bachelor's graduates who completed a Ph.D. For men, the Ph.D. attainment rate peaked in 1970, when 13.1% of the S/E bachelor's graduates of 1965 earned a doctorate. The 1985 S/E PhDs represented only 7.5% of the 1978 bachelor's graduates. Even for women, the peak was the Ph.D. class of 1973, when 6.2% of the 1966 S/E bachelor's earned PhDs. For the 1985 PhD class, the rate was 5.1% of bachelor's graduates from 1978 (Vetter and Babco, **Professional Women and Minorities**, 6th ed., p. 51).

The apparent relationship between federal support for graduate students and PhD awards is emphasized by the change in field relationships between bachelor's and doctoral degrees. At the bachelor's level, social science degrees predominate among the S/E awards. However, with little support in social sciences available to graduate students, and relatively a lot of support in the life sciences, the life sciences shoot ahead as the largest field of PhD awards.

This is verified significantly when looking backward from the PhD. Among doctorate recipients who listed primary source of support during the period 1977-85, federal support was a decreasing proportion of primary support in all fields and for all groups - i.e. all PhDs, U.S. citizens, U.S. men and U.S. women. Those decreases are so large that during that 9 year period, the proportion in each group and each broad field that depended primarily on federal support in 1977 had dropped by approximately half in 1985. The far higher federal support levels in the life sciences than in other field areas surely are a factor in the more rapid and longer lasting increases in PhDs in the life sciences.

In the life sciences, almost 30% of all PhD awardees in 1977 were principally supported by federal funds, compared with 13% in the physical

sciences, 12.4% in engineering, 11.4% in math/computer science and 22.5% in the social/behavioral sciences. By 1985, federal support was the primary support source for 19.7% of life science PhDs, 5.3% of physical scientists, 4.5% of engineers, 4.6% of math/computer scientists and 7.7% of social scientists.

The effect of falling federal support, unless university support increases as fast as federal support decreases, undoubtedly will reduce the number of PhD awards to U.S. citizens over the next several years. Among U.S. PhD recipients of 1972 through 1985 the proportion who got any federal support during their graduate study dropped from 62.2% to 24.4%. Although the drop is steady throughout these 13 years, the rate of drop accelerates after 1980. The change applies almost equally to men and women. Foreign students, too, have suffered a loss of federal support, with 12% of PhDs reporting some federal support in 1972, dropping to 5.8% in 1985.

Women

The number of women earning S/E degrees grew far faster than total growth in PhD awards after 1970, and growth almost tripled during the next fifteen years. However, even by 1985, women earned only one fourth of the S/E PhDs, and their representation in the physical, mathematical and computer sciences stayed well below this figure. Only in life and social sciences and psychology is their representation above 25%.

The effect of cuts in federal support were particularly significant for U.S. women. The proportion of women PhD recipients in the life sciences primarily supported by federal funds dropped from 40.8% in 1977 to 25.2% in 1985. The proportion of physical science doctorates with primary federal support fell from 17.2% to 8.2%; in engineering from 23.1% to 5.5%; and in social/behavioral sciences from 25.9% to 9.1%. No U.S. women PhDs in math/computer science in 1977 reported a primary federal support source, and only six women did so in 1985.

Because U.S. women PhDs also report far less institutional support than either men or foreign graduates, the self-support and loan burdens increased commensurately. It is no surprise, then, that the number and proportion of women earning PhDs in S/E fields has stopped increasing when women are only one fourth, instead of one half of S/E PhD recipients. Even among U.S. citizens, the number of women earning S/E PhDs peaked in 1984 at about 32% of those awards to U.S. citizens.

U.S. Citizens

Ph.D. awards in science and engineering are earned increasingly by foreign nationals, particularly in engineering and math/computer sciences. Examination of a decade (1975-1985) of degree awards to U.S. citizens finds that the number has dropped in the physical sciences (including in this case the math and computer sciences), engineering, and social sciences; and shows about a 25% increase in the life sciences. The consistently high level of federal support for graduate students in the life sciences and the low level of support in math and computer sciences may account for at least some of this difference.

The support data for graduate students is emphasized by the retrospective look at federal support for PhD recipients. Far higher proportions of U.S. PhDs in the life sciences report primary federal support than is true in any other field group, and the constantly falling proportion of PhDs reporting primary federal support in all field groups is directly reflected in the falling number of PhDs in these fields.

U.S. Men

The number of male U.S. citizens earning doctorates in any field has dropped steadily from 1975 through 1985. Among white men, the drop is 31.6% over the decade. An increase of 42.9% in the number of white women earning PhDs from 1975 to 1984 offset most of the drop in men. However, in 1985, the number of U.S. women earning doctorates was lower than in 1984, indicating a probable end to the upward curve.

In the physical sciences, the increase in degree awards to women did not make up for the decrease in the number awarded to men, so that the total in 1985 (2,947) is well below the 1975 total of 3,476 PhD awards to U.S. citizens. In engineering, the drop among white males is from 1,522 to 943 in 1983, rising to 1,000 in 1985. Even in the life sciences, the number of PhD awards to white U.S. males in 1975 (2,880) is higher than in 1985 (2,673).

In all S/E fields combined, the number of white U.S. males earning PhDs totalled 10,915 in 1975, and had dropped to 8,224 in 1985. Among white U.S. females, the number rose from 2,325 to 4,155 in those ten years. The 78.7% increase in S/E PhD awards to white U.S. women did not make up the 24.7% loss of 2,691 white U.S men during the decade. Thus, the relatively steady output of S/E PhDs over that time span reflects the increasing numbers of foreign degree recipients in S/E fields.

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The drop in primary federal support reported by U.S. male PhD recipients from 1977 through 1985 probably is a significant factor in the smaller number of PhD awards to this group. The proportion of the 1977 U.S. male S/E PhDs who had primary federal support was 18.6%. That proportion had dropped to 8.6% by 1985. Among U.S. male PhD recipients reporting any federal support for their graduate years, the proportion fell from 61.8% in 1972 to 23.3% in 1985. Although primary university support for U.S. male PhDs increased seven percentage points during those years, the combined total of primary federal and university support dropped from 71.6% in 1977 to 68.9% in 1984, rising to 69.6% in 1985. The number with primary federal plus institutional support dropped from 9,179 in 1977 to 7,981 in 1984, rising to 8,312 in 1985. That 867 decrease from 1977 to 1985 is almost half of the drop of 1,764 in S/E PhD awards to U.S. males for the same years.

Minorities

A number of efforts have been made, both at the federal level and through the private sector, to increase the number of PhDs in science and engineering who are members of minority groups. Asians, including those who are U.S. citizens, show increasing numbers of doctoral awards in S/E fields, particularly in the physical/math sciences and engineering. However, the number of awards to blacks, Hispanics and American Indians shows very little change over the past decade except in the social/behavioral sciences, where both blacks and Hispanics have increased the number of degree awards. Overall, Ph.D. awards to blacks have decreased over the decade, while the numbers awarded to all other minority groups have increased. The numbers remain small, and well below their proportions in the total population. The declining number of PhD awards to blacks, which has occurred not only in S/E fields but also in all fields, is especially troubling. Whether additional federal support, by itself, would increase the number of black PhD awards significantly is not known. However, anecdotal information indicates that many black bachelor's graduates may bypass graduate school because of the need for immediate earnings.

GRADUATE STUDENTS

The Data

Data on full time graduate enrollments in PhD departments, and on the number of those students who have direct federal support comes from the

National Science Foundation. In most instances, data reported in one year do not match with other data reported in later publications for that year. There are two reasons for this. Sometimes the needed data are found only for institutions reporting in two or more consecutive years, and thus, the numbers are smaller than would be true if all departments reported for all years. Internal numbers may not match totals because of this. A second reason is that some institutions which do not report one year do report in the next year, providing two years of data. In later editions, the supplementary numbers may be added to the total first reported for that year. In some years, including 1978, the survey was truncated, and thus data for that year may be missing, although it is supplied for some characteristics. In order to provide as much consistency as possible in graphs, some missing numbers have been interpolated or estimated. Table notes indicate such changes.

Enrollment and Federal Support

The only consistent enrollment and support data over time (1965-1984 for the longest period available) is for full time graduate students enrolled in doctoral departments. Therefore, all the following information about federal support is related to this group. Students enrolled in PhD-granting departments consistently represent 92-94 percent of all full time graduate students enrolled, but only about 50-70 percent of all graduate students enrolled, including those enrolled part time. There is sufficient data to back up the assumption that direct federal support is generally directed to full time students, rather than to part timers.

Most of the direct support provided by federal agencies is awarded to graduate students, principally in the form of fellowships, traineeships and research associateships or assistantships.

The number of full time S/E graduate students whose principal support is provided by the federal government has stayed remarkably steady for two decades, ranging from 45,000 to 53,000 students. However, the proportion of full time S/E graduate students with federal support has dropped consistently since the late sixties as support levels failed to keep pace with increasing enrollments. The drop in percent with federal support occurs across all the broad S/E fields, although the proportion of students supported in some fields is consistently far higher than in others. Over the past decade, a higher proportion (about 32%) of those in the physical sciences than in any other field have had federal support, followed closely by the life sciences

(29%) and engineering (24%). Less than 15 percent of students in psychology, math and computer science and social science had federal support during the 1980s, down from far higher proportions in earlier years.

The number of graduate students supported by federal sources is highest in the life sciences, where support increased rapidly after 1973. Physical science and engineering students vie for a late second place, while the number of students in math and computer sciences with federal support remains below 2000/year. In 1974, when a breakout of data for math and computer science students became available, about the same number were supported in each subset. Since 1980, more computer science students than math students have had federal support. By 1984, 62% of the combined support is for computer science students.

Men and Women

Data on enrollments were not collected by sex until 1972. The full time enrollment of women in doctoral institutions in science and engineering has increased steadily since 1972 in all S/E fields, with the largest increases and numbers in the life and social sciences, and the smallest in math/computer sciences. The number of men enrolled has stayed steady since 1974, except for an increase in engineering. If data were available to separate out male U.S. citizens, probably the number of U.S. male graduate students enrolled would show a drop, since a large majority of foreign students are male.

Men make up two thirds of full time graduate students, but get about three fourths of all federal support provided. Further, the proportion of men with federal support is consistently higher in all fields than the proportion of women with federal support. Thus, it is not just field choice or the higher numbers of men enrolled that account for the difference. Women show consistently higher proportions of graduate students who are funded by self-support than is true for men, regardless of field. For men, the highest percentage of students with federal support is in the physical sciences and the lowest is in the social sciences. For women, the highest proportion with federal support is in the life sciences and the lowest in math/computer sciences. Although social sciences is the second highest enrollment field for women, the number with federal support in social sciences is quite small. The relatively high rate of primary federal support of women PhDs in social science indicates a large drop-out of women prior to the PhD.

Looking back from the PhD, we find that although similar proportions of U.S. men and women had federal support at some time during their graduate study (dropping from 66% to 27% of women in the 1972-85 years and from 62% to 23% of men), women were somewhat more likely than men to have had primary federal support. For U.S. women S/E PhD recipients, the proportion reporting primary federal support from 1977 to 1985 drops from 28.2% to 13.7%. The figures for U.S. men drop from 18.6% to 8.6%. Since a considerably higher proportion of men graduate students in these fields than of the women have federal support, we might conclude that women are somewhat more likely than men to complete an S/E PhD if they have primary federal support. Bolstering this supposition is the fact that women PhD recipients (about 40%) are much less likely than men (about 60%) to have had primary support from their university. Thus, federal support was a vital component to a higher proportion of the women than of the men.

The higher support level for graduate students in the life sciences may be a significant factor in the higher enrollment levels for both men and women in the life sciences, and consequently the PhD awards. Within the life sciences subfields, the proportion of women who have federal support is higher than for men in the health sciences, but is lower in both the biological and agricultural sciences. The proportion of women with federal support is considerably lower than the proportion of men who get federal support in engineering, physical and environmental sciences, and math and computer sciences. The proportion supported is about equal in psychology and in the social sciences.

Foreign Students

The drop in the proportion of graduate students with federal support is not, apparently, much affected by the increasing numbers of foreign students in U.S. graduate schools, since federal support for foreign students, at least until the past few years, appears to be awarded in approximately the same proportion as to all graduate students. No data are available on federal support of foreign students after 1973, but between 1966 and 1973, 22-25 percent of all foreign S/E graduate students had federal support. In Fall 1985, Barber and Morgan (**SCIENCE**, V. 236, April 3, 1987, pp 33-37) found that 30.1% of all foreign research associates in engineering were federally supported (45.7% in the top half of ranked doctoral institutions). While a direct comparison with earlier years is not possible, NSF data indicate that

21.5% of foreign engineering doctoral students had major support from the U.S. government in 1966, as did 47.3% of U.S. engineering graduate students in these departments.

Looking retrospectively at federal support for PhD recipients in 1977-85 shows that foreign S/E PhD recipients (both those on permanent and temporary visas) were considerably less likely to have their primary support from the U.S. government than was true for U.S. students, and only 12% of 1972 foreign PhD recipients compared with 62.2% of U.S. recipients report federal support. By 1985, those proportions had dropped to 5.8% and 24.4% respectively.

When looking at just one field, engineering, the federal support levels are surprising. In 1972, 62% of U.S. Engineering PhDs reported federal support for graduate study, as did 8.8% of foreign engineering PhD recipients that year. For U.S. engineering PhDs, the proportion reporting federal support then drops steadily every year, until by 1985, only 17% report federal support. For foreign engineering PhDs, however, the proportion reporting federal support rises to 11.7% in 1975, and then averages about eight percent each year through 1983, before dropping to 4.1% in 1985.

Foreign support for U.S. graduate students, almost all of it for foreign students, is the principal support source for an increasingly smaller percentage of foreign S/E students, ranging from 21% in 1966 to 13% in 1984. No available data can tell us whether the remaining support for foreign students represents an increase in federal support, in institutional support, in self support, or in support from other U.S. sources. For those years in which data on federal support of foreign students are available, the principal type of federal support is research associateships.

Non-Federal Support

Federal support, which accounted for 30% of all direct support for graduate students in 1972 (31% for men and 27% for women), now accounts for only 19% of direct support (21% for men, 18% for women). The major source of support for graduate students continues to be institutional support, accounting for 39% of the total in 1972 and 41% in 1984 (42% for men and 40% for women). Self support, which was the major source for 23% of S/E students (27% for women, 22% for men) in 1972, now is the source for 30% of students in these fields (35% of women and 28% of men). As noted, the sex differences are not a function of field choice.

These sex differences in university support are magnified when looking back from the PhD at principal source of support. For U.S. S/E PhD recipients, 40% to 47% of women from 1977 through 1985 report their primary support source for graduate study as the university, compared with 54% to 61% of U.S. men.

Type of Support

The three major types of support for students are fellowships or traineeships, research associateships and teaching assistantships. The federal government supports many of the fellowships/traineeships and the research associateships, while most of the teaching assistantships are institutionally supported. In recent years, about 15% of S/E graduate students are supported by fellowships or traineeships, about 22% by research associateships, and about 24% by teaching assistantships. The remainder are supported by other types of support.

Foreign Students

Type of Support

For those years for which data are available for foreign students by type of support, approximately 22-25% were supported by fellowships or traineeships, 44-47% by research associateships, and 28-33% by teaching assistantships.

Source of Support

From 1966-1973, data are available on federal support for foreign graduate students in U.S. doctoral institutions. During that period, less than 10% were supported by foreign sources, while about 23-24% were supported by federal funds. After 1973, the percent of students with foreign support rose to about 15% by 1976, but has been falling since that time. The remainder of support for foreign students is some combination of institutional, federal, self and other sources.

Examined retrospectively from the PhD, foreign S/E PhD recipients report primary federal support dropping from almost 6% in 1977 to 3% in 1985; principal university support steady across those years at 65-67%, self support rising from the 9.5% average of 1977-83 to 12% in 1984 and 1985; and "Other", including foreign support, rising from 16% in 1977 to 20% in 1980 and 1981, before dropping slowly back to 17.2% in 1985.

Fellowships and Traineeships

In the late sixties, about 30% of all full time graduate students in Ph.D. departments had fellowships or traineeships, and more than two thirds of these were supported by the federal government. In recent years, the proportion with fellow/traineeships has dropped to 15% or less, and only about 37% of these are federally supported.

Numerically, more than 30,000 full time graduate students were supported by federal fellowships and traineeships in 1967, but that number dropped steadily to only 14,000 by 1973. The number rose to 20,000 in 1974 before starting downward again, reaching a 13,000 low in 1984.

The two major agencies providing federal support for fellowships/traineeships and training grants are HHS (largely through NIH) and NSF. The amount of support from both these agencies for this purpose has dropped in constant dollars, but the drop at HHS is the most significant. At HHS, fellowship funding peaked at over $1 billion in 1967, and had dropped to $152 million in 1982. NSF fellowships follow the same long-term trend, although the level of support in all years has been well below HHS funding.

In constant dollars, HHS provided 87% of all federal fellowships/traineeships/training grants over the 1966-1985 period, with NSF a poor second with 9.7% of the total. DOD, DOE and NASA were minor contributors to fellowship programs. Thus, as HHS support for fellowships started downward in 1978, so did the number of students being supported by this federal mechanism. Each change in the number being supported shows a parallel change in the HHS constant dollar figures.

NASA was a significant contributor to fellowships and traineeships in 1966 and 1967, but support levels dropped abruptly in 1968, and stayed low. The low point of $1.8 million in 1978 has since risen to $5 million in 1985. DOD contributions for fellowships and traineeships are non-existent until 1983, and miniscule after that time. DOE provided almost $14 million for fellowships in 1969, but only $36 thousand in 1985.

Research Associateships and Assistantships

Research associateships and assistantships are now the most significant type of support for S/E graduate students, having surpassed fellow/traineeships in 1970. The number of students with federal support for research assistantships also exceeds the number with direct federal support of

any other type, having passed fellow/traineeships in 1972. About 20-22% of all S/E graduate students are principally supported by research associateships, and 61% of direct federal support for students is in this form.

Teaching Assistantships

About one fourth of full time S/E graduate students are supported by teaching assistantships, and the source of support for almost all of these is institutional.

Source of Support

As noted above, about 39-40% of S/E graduate students are supported by the institutions themselves - often as teaching assistants, but also in other forms. The federal government supports 19-20%, and about 30% are self-supporting. These percentages differ significantly by sex, as discussed above.

Relationship of Federal Support and S/E PhD Awards

There appears to be a definite and direct relationship between the number of graduate students with federal support and the number of Ph.D. awards. Since 1970, S/E Ph.D. degrees have remained essentially constant at approximately one fourth of the total number of S/E graduate students with federal support, just as the number supported has remained essentially constant.

Although more foreign students are included in the Ph.D. recipient population each year, this does not appear to have a significant bearing on the relationship of federal support and degree awards, because foreign students as well as U.S. students receive federal support, although probably at lower proportions.

Ph.D. output examined by field against the number of graduate students with federal support in the same field shows somewhat more variation.

In engineering, output peaked in 1971 as did the number of students with federal support. A slight increase in support after 1982 is matched by a small increase in Ph.D. awards.

Support for students in the life sciences rose much faster than Ph.D. output, and the drop in support after 1980 already is reflected in the Ph.D. awards.

In math and computer sciences, the abrupt drop in federal support after 1969 is reflected beginning one year later in doctorate output. The increase in the number with federal support beginning in 1979 is not yet reflected in PhD awards. However, the number of students with federal support in these fields is small, as is the number of PhD awards.

The drop in support of physical science students from 1969 to 1973 is reflected in PhD output beginning in 1972, and the slow increase in support again preceeds the PhD increase by three years.

Psychology degrees show an opposite relationship to support, with the number of doctorates increasing throughout the period while the number with support drops with equal consistency. Degrees in the social sciences start dropping at the same time support starts down.

Because direct federal support is provided on a competitive basis to the best S/E students, it appears obvious that federal support not only has affected the number of S/E PhD awards, but also affects the quality of output in a positive way.

Direct Federal Support by Agency and Field

[Note that the total number of graduate students supported by federal sources in 1971 is considerably larger than the sum of the numbers supported by various agencies, because the individual agency support data for that year are available only from departments reporting in two successive years.]

The number of S/E graduate students supported by the major federal agencies differs over time, from agency to agency, and from field to field. Unfortunately, information on direct student support from AEC and NASA was collected through the NSF surveys only from 1969-1973, and NDEA support was not broken out in the HHS totals after 1973. Data are available from 1969 to the present for NIH, as well as for "other HHS" support, which includes support from the former HEW, and current ED.

HHS (formerly HEW) is the major supporter of graduate students in science and engineering, both through NIH and through other support mechanisms. NSF follows as the agency providing federal support to the most students, but the Department of Defense shows larger increases since 1980 than any other agencies. For the years in which AEC and NASA data are available, the number of students supported ranged from just under 3,000 to more than 1,000 each.

The number of graduate students supported by HHS ranges as high as 23,000 in 1979, but has dropped to below 16,000 in 1984. NDEA support dropped steadily during the five year period when those data were reported separately, supporting 7,000 students in 1969 and less than 2,000 in 1973. NIH support has remained amazingly steady at about 12,000 students.

Most of NIH support is in the life sciences. HHS, and particularly NIH, is the agency source for almost all of the federal support provided to students in the life sciences. Support from the U.S. Department of Agriculture is a fairly significant source for the few years (1969-71) where USDA data are reported separately, while NASA and AEC supported very few students in this area. NSF support for students in the life sciences is small.

DOD supports more students in engineering than in all other S/E fields combined, with support for students in the physical sciences being a late second. However, until the 1980s, DOD support for engineering graduate students was only slightly above NSF support.

Only 7-8% of graduate students in mathematics and 11-12% of those in computer science have any federal support. For the small number supported, DOD has been the principal federal source since 1974, when it topped NSF. Since 1971, fewer than 2000 graduate students in math and/or computer sciences have had federal support from any agency, although DOD support has increased steadily in these fields since 1978. The relatively small number of graduate students in the math/CS field who have federal support may be a significant reason why so few PhDs are awarded in these fields, despite the excellent job market, particularly for Ph.D. computer scientists, in the past several years. The total peaked in 1970 at 1,343 degrees, and has dropped steadily to 946 degrees in 1984.

NSF and DOD are the principal agencies providing support in math/cs. However, NSF support in this field dropped from 1,759 students supported in 1970 to only 606 in 1983. DOD provided support for 317 in 1970, rising to 912 in 1984.

NSF supports more graduate students in the physical sciences than in any other field, followed by engineering, life sciences, social sciences, math/computer sciences and finally psychology. This order of support has not changed significantly since the early seventies, except for a continuing drop in support of social science students since 1980.

A higher proportion of physical science students - about a third - are federally supported than is true in any other field. As expected, most

federally supported graduate students in the physical sciences have support from NSF, and the number supported has remained fairly level between 3700 and 4500 for two decades. NIH supports about 1200 students in physical sciences, and DOD almost as many. DOD support has been increasing for this group of students.

Fewer than 2000 graduate students in psychology had federal support in 1984, down sharply from more than 5,000 in 1969. Because of the high growth in enrollments in psychology, the proportion of graduate students with federal support in this field dropped from more than 40% in the late sixties to 7% by 1984. HHS, both through NIH and other programs, has been and continues to be the major support agency for this field. The NIH support has dropped more slowly than total HHS support. NSF supports only about 200 students in psychology, down from the 500 level in the early seventies.

Only half as many students in the social sciences had federal support in 1984 as in 1969, and the proportion of students in the social sciences with federal support has dropped from more than 20% to 7% over the two decades. Until 1980, HHS supported 2000-3000 graduate students in the social sciences, including 500-1300 with support from NIH. NSF support dropped from 1300 students in 1970 to 300 in 1984. The majority of students in these fields who have federal support fall into the "Other Federal" source. DOD supports only about 300 students in the social sciences, although DOD support is somewhat higher in the past decade than in the previous one.

PHD RECIPIENTS - SUPPORT FOR GRADUATE STUDY

Source of Primary Support

Data from the NRC Doctorate Records file provides a picture from 1977 through 1985 of the primary source of support for the majority of PhD graduates of those years. Further, the information is available by citizenship and by sex, as well as by field (NRC DRF Special Tabulations).

The Federal government was the primary support source for 20.2% of S/E PhDs graduating in 1977, and that proportion dropped with each succeeding class to 9.7% in 1985, reflecting the downward trend of federal support for graduate students which began in 1980. Federal support for foreign students as a primary support source fell from 5.6% to 2.9% in those 9 years. For U.S. men, federal primary support fell from 18.6% of the total group in 1977 to 8.6% in 1985; while the proportions of U.S. women S/E PhDs with primary support from the federal government dropped from 18.2% to 13.7%.

As direct federal support dropped, R&D funding for Universities was rising, and providing funds to universities that were used in part to fund graduate student research associates and assistants. Across these years, among all S/E PhDs reporting the university as a primary support source, the proportion increases slowly from 51.8% to 57.9%. However, although university support for foreign citizens stayed relatively stable at about 66%, U.S. women list University as a primary source much less often than either U.S. men or foreign students. Forty percent of U.S. women and 54% of U.S. men list University support as primary in 1977; 47.3% of women and 61% of men list this primary source in 1985. This difference may be in part attributable to the greater use by universities of federal R&D support to fund research assistantships in fields most strongly dominated by men - namely engineering, and physical sciences. However, this would not explain the entire difference. About one fourth of S/E graduate students are supported by teaching assistantships, which are almost wholly university-based.

Self support increased among all groups, although the increase for U.S. men was only one percentage point to 21% from 1977 to 1985. For U.S. women, the group reporting the highest proportion of self-support as primary, the proportion in 1977 was 27.9% and in 1985, 32.3%. Foreign students also show increasing proportions as principally self-supporting - from 9.6% in 1977 to 11.9% in 1985. Nonetheless, as was true among graduate students, a far higher proportion of women than of men or foreign students must rely on their own earnings. Women also are far more dependent on loans as a primary support source than are men, even though the proportion of women listing that primary source is only 4.1%. Thus, their higher proportionate support from federal sources is more than counterbalanced by their far lower university support, and their greater reliance on their own earnings and on loans.

Loans represent only a relatively small primary support source even for women, but the "other" category, which includes support from foreign sources, is a significant factor for foreign students, and also is significantly higher for U.S. men than for U.S. women. In 1977, 16.4% of foreign PhDs list "other" as the primary support source, and the percentage rose over the next four years to 20.1%, dropping again in the next years to 17.2% in 1985.

These numbers fall in line with the picture viewed at the graduate student support level. Federal support has been dropping; smaller proportions of graduate students had federal support, and smaller proportions

of PhDs each succeeding year after 1977 report primary federal support. This downward trend probably would continue for a few more years even if federal support were immediately increased because of the long downward slope in the federal support curve through 1983. Some of the drop in PhDs that may occur as a result of falling direct federal support might be made up by increases in university support utilizing some of the increasing R&D obligations to universities to fund graduate research assistants.

Primary Federal Support by Field

Examined by field of science, primary federal support to PhD recipients is far higher in the life sciences than in any other S/E field, and this is true not only for all S/E PhDs but also for both male and female U.S. citizens, and for foreign citizens. Although primary support from federal sources drops steadily from 1977-85 in the life sciences, as it does in all other field groups, it remains true throughout that the percent of PhDs in the life sciences with primary federal support is higher than the percent with federal support in any other field. Indeed, by 1985, less than 8% of PhDs in any other field than life science reported primary federal support. Even among U.S. citizens, less than 8.5% report primary federal support, and the proportion is only 6.4% in the physical sciences.

It is notable that for male graduate students, the highest percentage supported is in the physical sciences. However, among U.S. male PhDs, the largest proportion reporting primary federal support is in the life sciences ranging from 32% down to 22% over 9 years. Physical sciences PhDs report that only 15-8% of their primary support is from federal sources.

Foreign PhDs in the life sciences show higher proportionate primary federal support (10-6%) than is true in any other field group. Among new engineering doctorates, which includes the largest numbers of foreign PhD recipients, the proportion with primary federal support ranges downward from a peak of 5% in 1982 to 1.6% in 1985. A similar proportion of physical science PhDs had primary federal support, and it is surprising to note that a higher proportion of foreign PhD recipients in the social/behavioral sciences had federal support during their graduate years than was true for engineering, physical sciences, or math and computer sciences.

Women PhDs in the life sciences, like women graduate students, report highest primary federal support (41-25%). Women physical science PhDs are far less likely to report primary federal support (17-8%), while women social

science PhDs report federal support as a primary support in 26-9% of cases from 1977-1985.

Also notable is the fact that male graduate students are significantly more likely than females to have federal support, but women PhDs report federal primary support at a higher rate than men. This suggests that women with primary federal support are more likely than men with similar support to complete the doctorate. The very large difference between men and women S/E PhDs in the proportion reporting the university as a primary support source may also substantiate this conclusion, and lead additionally to the conclusion that federal support is more critical for women than for men, since the universities have made up more of the federal support drop for men than for women. For men, 69.6% had either federal or university support in 1985, down three percentage points from 1977. For women, the combined support is 61% in 1985, down 7.2 percentage points from 1977.

By Agency

As with graduate students, HHS/ED is the major source of primary federal support for PhD recipients from 1977-1985, with NSF a distant second, approximately equal to all other federal sources combined. Although the proportion of PhD recipients with primary federal support drops steadily from 1977 through 1985, the proportion of that support from HHS/ED increases from about 59% to 66% over those years, picking up the slack as the number supported by the GI Bill declines. NSF provides about 16.5% of the primary federal support, and other federal agencies combined from 15% to 20%. In this data base, DOD is not broken out from the "Other Federal" category (NRC DRF Special tabulations).

All Federal Support

More S/E PhD recipients report some federal support during their graduate study than report that the federal government was their primary source of support. Looking again at the total S/E PhD population over the period 1972 through 1985, the proportion reporting some federal support during their graduate years ranges downward in all groups: from 61.8% of U.S. men in 1972 to 23.3% in 1985; from 65.6% of U.S. women to 27.0%; and from 11.9% of foreign PhDs to 5.8%. Among all S/E PhD recipients, the proportion with some federal support was 44.1% in 1967, rising to 53.7% in 1971 before moving steadily downward to 19.3% in 1985.

There appears to be little doubt that federal support is significantly and positively related to the production of S/E PhDs. The steady drop in the proportion of S/E PhD graduates with federal support after 1971 is accompanied by a drop in degree awards beginning in 1974. Looking only at U.S. S/E doctorate awards, the number drops steadily to 1978, before essentially levelling off for the next 7 years. Any desired increase in the number of doctoral graduates in S/E fields during the next decade, particularly an increase in U.S. citizens, may require substantial increases in federal or university support, particularly because the number of women pursuing these degrees appears to have stopped rising.

POSTDOCTORATES

The number of postdoctorates in S/E departments at doctoral institutions grew from 6,100 in 1965 to 21,666 in 1984. Data available since 1974 indicate that 70-75% of these postdoctorates were supported by federal funds. Unlike support for graduate students, the proportion of postdocs supported by federal funds has stayed almost level since 1975, with the number supported increasing as the number employed increased. In contrast, the number of graduate students with federal support has remained fairly stable, but the proportion with such support has dropped steadily for two decades.

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00038

TABLES AND GRAPHS

Legislation Affecting Education: 1945-1985

Implicit Price Deflators for GNP 1944 - 1984

Implicit Price Deflator for GNP: 1982 = 100

GNP, Total and Federal R&D, in millions of 1982 constant Dollars, 1944-1985. Engineering Unemployment Rates 1963-1984

Total and Federal R&D and GNP, Current dollars
Total and Federal R&D and GNP, Constant dollars
GNP, Federal R&D and Federal Outlays for Education
Total and Federal R&D and Unemployment Rates for Engineers

DIRECT AND INDIRECT FEDERAL SUPPORT OF SCIENCE AND ENGINEERING EDUCATION - Agency Programs by educational level, Recipients, and S/E or General Education support

U.S. Outlays for Education by Function - Current Dollars
U.S. Outlays for Education by Function - Constant 1982 Dollars
U.S. Outlays for Education by Function - Current Dollars
U.S. Outlays for Education by Function - Constant 1982 Dollars

Expenditures for Education by the Department of Education by Type of Education Support 1965-1985

US Outlays by Function for Education - Current Dollars
US Outlays by Function for Education - Constant Dollars
ED Grants, Loans and Guaranteed Loans - Constant Dollars
ED Graduate Aid: Loans, Work-Study, Fellowships - Constant $

NSF Obligations for S/E Education by Level, Current and Constant 1982 Dollars, 1952-1986

NSF Obligations for S/E Education, by Education level - Current $
NSF Obligations for S/E Education, by Education level - Constant $
Percent of NSF Obligations for Education, by Level of Education
NSF Outlays for Precollege Support and number of S/E Bachelor's Degrees
NSF Outlays for S/E Education and number of S/E Ph.D.s
Comparison of NSF Outlays for S/E Education with U.S. Outlays for Education

Federal Obligations to Universities and Colleges by Type of Activity and Agency 1963-1985 and by Field 1971-1985

Federal Obligations to Univ/Colleges by Type of Activity, Constant Dollars
Federal Academic Support to Univ/Colleges by Agency, Constant Dollars

The GI Bills

Cost of Educational Benefits in Current and Constant 1982 Dollars, 1944-1985; No. of College Students Supported, and Cost/Student in current and Constant 1982 Dollars, 1944-1985

No. of College Trainees under the G.I. Bills
Cost of Direct Benefits for all veteran's educational benefits in current and constant 1982 dollars
College Level Direct Benefits under the GI Bill, current dollars
Cost per person for college trainees under the GI Bills - Current dollars
Cost per person for college trainees under the GI Bills - Constant dollars

Veteran Enrollment and Total and S/E Bachelor's Degrees by Sex 1950-1985

Veterans Enrolled, Bachelor's Degrees by Sex and S/E Bachelor's

Degrees in All Fields and in Science and Engineering by Level, 1950-85

S/E Bachelor's Compared with S/E Master's and Ph.D.s
S/E degrees as a percent of all Degrees, by level
No. of Bachelor's and S/E Bachelor's Degrees
No. of Master's and S/E Masters Degrees
No. of Doctorates and S/E Doctoral Degrees

Bachelor's Graduates by S/E Field and Sex 1950-85

Bachelor's Graduates in Physical Science by Subfield and Sex 1950-84

Bachelor's Graduates in Engineering by Subfield and Sex 1950-84

No. of Women's Bachelor's Degrees and S/E Bachelor's Degrees
No. of S/E Bachelor's Graduates by Field
S/E Bachelor's as a Percent of All Bachelor's Degrees
Percent Women Among All Bachelor's Degrees and S/E Bachelor's Degrees
Women S/E Graduates as a Percent of All Women Graduates
No. of Bachelor's Degrees and No. Awarded to Women
No. of Women S/E Bachelor's Graduates by Field

Ph.D. Awards to U.S. Citizens by Broad Field, Racial/Ethnic Group and Sex 1975-1985

No. of Minorities Earning Ph.D.s in the Physical Sciences, by Minority
No. of Minorities Earning Ph.D.s in Engineering, by Minority
Minorities among Ph.D. Recipients in the Social Sciences, by Minority
Minorities among U.S. Ph.D. Recipients, by Minority
Minorities among Ph.D. Recipients in the Life Sciences, by Minority
Minorities among Ph.D. Recipients in Professional Fields, by Minority
Minorities among Ph.D. Recipients in Education, by Minority

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Cost per person for college trainees under the GI Bills - Constant dollars

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S/E Bachelor's Compared with S/E Master's and Ph.D.s
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No. of Bachelor's and S/E Bachelor's Degrees
No. of Master's and S/E Masters Degrees
No. of Doctorates and S/E Doctoral Degrees

Bachelor's Graduates by S/E Field and Sex 1950-85

Bachelor's Graduates in Physical Science by Subfield and Sex 1950-84

Bachelor's Graduates in Engineering by Subfield and Sex 1950-84

No. of Women's Bachelor's Degrees and S/E Bachelor's Degrees
No. of S/E Bachelor's Graduates by Field
S/E Bachelor's as a Percent of All Bachelor's Degrees
Percent Women Among All Bachelor's Degrees and S/E Bachelor's Degrees
Women S/E Graduates as a Percent of All Women Graduates
No. of Bachelor's Degrees and No. Awarded to Women
No. of Women S/E Bachelor's Graduates by Field

Ph.D. Awards to U.S. Citizens by Broad Field, Racial/Ethnic Group and Sex 1975-1985

No. of Minorities Earning Ph.D.s in the Physical Sciences, by Minority
No. of Minorities Earning Ph.D.s in Engineering, by Minority
Minorities among Ph.D. Recipients in the Social Sciences, by Minority
Minorities among U.S. Ph.D. Recipients, by Minority
Minorities among Ph.D. Recipients in the Life Sciences, by Minority
Minorities among Ph.D. Recipients in Professional Fields, by Minority
Minorities among Ph.D. Recipients in Education, by Minority

00040

Enrollment and federal support of full time S/E graduate Students in Ph.D. Departments by Broad Field (1965-1984) and Subfield (1974-1984)

No. of Graduate Students enrolled and No. with federal support
No. of Life Science Students Enrolled, and No. with fed. support
No. of Graduate Students enrolled, by field
No. of Graduate Students Supported, by field
Percent of S/E Graduate Students with major federal support
Percent of S/E Graduate Students with federal support, by field
No. of Life Science Students Enrolled, by Subfield
No. of Math/Computer Science Students Enrolled by Subfield
No. of Physical/Environmental Science Students Enrolled by Subfield

Enrollment of full time science and engineering graduate students in Ph.D. departments, by sex and field (1972-1984)

Full time science and engineering graduate students in Ph.D. departments who have federal support, by sex and field and subfield 1974-84

No. of Men with Support, by Field
No. of Men and Women with Federal Support
Percent of Federal Support, by Sex
Percent of Men with Federal Support, by Field
Percent of Women with Federal Support by Field
No. of Men Enrolled by Field
No. of Women with Support by Field
Number of Women Enrolled by Field

Enrollment of Full time science and Engineering graduate students in Ph.D. departments by citizenship, 1965-1984

No. Enrolled, by Citizenship
No. Enrolled in S/E by field
No. of U.S. Citizens Enrolled in S/E, by field
No. of Foreign Students Enrolled, by Field
Percent Foreign Enrollment by Field

S/E Graduate Students with Federal Support Compared with S/E PhD Awards, 1966-1984

Total with Federal Support and Total PhDs
Engineering Students with Federal Support and Engineering PhDs
Life Science Students with Federal Support and Life Sci PhDs
Math/Computer Science Students with Fed Support and Math/CS PhDs
Phys. Sci. Students with Fed Support and Phys Sci. PhDs
Psychology Students with Fed Support and Psychology PhDs
Social Science Students with Fed support and Soc. Sci PhDs

Type of Support of Full Time Science and Engineering Graduate Students in Ph.D. departments 1965-1984

Type of Federal Support of Full time S/E Graduate Students in Ph.D. Departments 1967-1984

Federal Support to Univ. and Colleges for Fellowships and Traineeships, NSF and NIH, in constant 1982 Dollars 1966-1985 (Table in later section)

Percent with Federal Support, by type of support
Percent with each type of support
Percent of Federal Support by type of support
No. by type of support
No. by type of federal support
Dollar Support by NSF and NIH for Fellowships, Constant 1982 dollars

Federal (1966-73) and Foreign (1966-84) Source and Type of Support for Foreign S/E Graduate Students

Percent of foreign students with federal and foreign support

Source of Support of Full time S/E Graduate Students in Ph.D. Departments, by Sex, 1972-1984

No. Supported by Source
Source of Support for Men, by Source
Source of Support for Women, by Source
Percent of Students Supported by Institutions, by sex
Percent of Students Self-supported, by sex

Federal Support of full time S/E students in Ph.D. Departments by Agency and Field, 1969-1984

No. Supported by Federal Agencies, by agency
No. Supported by DoD, by Field
No. Supported in Engineering, by Agency
No. Supported by HHS, by NIH, NDEA and Other

Federal Support of full time S/E students in Ph.D. Departments by Agency and Field, 1969-1984 - continued

No. Supported by HHS, by Field
No. Supported in Life Sciences, by Agency
No. Supported in Math/Computer Sciences, by Agency
No. Supported by NSF, by Field
No. Supported in Physical Sciences, by Agency
No. Supported in Psychology, by Agency
No. Supported in Social Sciences, by Agency
No. of S/E Students supported by Federal Government
Percent Supported in Engineering, by Agency
Percent Supported in Life Sciences, by Agency
No. Supported in Engineering, by Agency
Percent Supported in Math Sciences, by Agency
Percent Supported in Physical Sciences, by Agency
Percent Supported in Psychology, by Agency
Percent Supported in Social Sciences, by Agency
Percent Supported by HHS, by Field
Percent Supported by NASA, by Field
Percent Supported by NDEA, by Field
Percent Supported by NIH, by Field

Percent Supported by NSF, by Field
Percent Supported by Other HHS, by Field
Percent Supported by AEC, by Field
Percent Supported by DoD, by Field
Percent Supported by USDA, by Field

Source of Primary Support of S/E PhDs by Citizenship & Sex 1977-1985

Primary Support Source for U.S. Women S/E PhDs
Primary Support Source for U.S. Men S/E PhDs
Primary Support Source for Foreign S/E PhDs
Primary Support Source for All S/E PhDs

Number and Percent of PhD Recipients with Primary Federal Support by Field, Sex and Citizenship 1977-1985

Percent of S/E PhDs with Primary Federal Support by Field
Percent of US Male S/E PhDs with Primary Federal Support by Field
Percent of US Female S/E PhDs with Primary Federal Support by Field
Percent of Foreign S/E PhDs with Primary Federal Support by Field

Number and Percent of PhD Recipients Reporting Federal Support, by Sex and Citizenship, 1972-1985

Percent of All, U.S., and Foreign S/E PhDs with Federal Support
Percent of U.S. S/E PhDs with Federal Support by Sex

Postdoctorates in Academic Institutions 1965-84 and Federal Support of Postdoctorates 1973-1984

Percent of Postdoctorates with Federal Support
Number of Postdoctorates and No. with Federal Support

FURTHER SUGGESTED RESEARCH

Some of the findings of this research indicate further questions that should be pursued. In some cases, such research deals with data already available. In others, additional data might be needed that was not a part of this project.

1. Why are women graduate students so much less likely than men to have primary university support? Are they less able than men? What part is played by field choice?

2. U.S. Women PhD recipients report proportionally higher primary support from federal sources than do men, although women graduate students report less federal support than men. Does this indicate a higher drop-out rate for women graduate students without support, or a higher completion rate for the PhD for women with federal support than for men with federal support?

3. PhD production by field has followed the pattern of federal support, with life sciences having the highest real and proportional federal support and the highest number of degree awards, relative to other broad S/E fields. PhD scientists in the biological sciences also report the highest unemployment rates and the lowest salaries, indicating slight overproduction, as has been the case for several years. Why does so much support go to students in the life sciences, and so little to those in mathematics, computer science and engineering, where shortages have been evident for PhDs for several years?

4. Are foreign citizens with permanent U.S. residency appreciably different from U.S. citizens, or from foreign citizens on temporary visas in their federal support availability? (Data already are available to determine this looking back from the PhD.)

5. How much of the federal R&D funding supplied by the various federal agencies to colleges and universities is used for direct federal support of graduate students, via research associatships or assistantships, or in some other way?

LEGISLATION AFFECTING EDUCATION

1945-1985

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LEGISLATION AFFECTING EDUCATION: 1945-1985

LEGISLATION	1945	1950	1955	1960	1965	1970	1975	1980	1985
Servicemen's Readjustment Act (PL 78-346) (1944)									
US Information and Educational Exchange Act (PL 80-402) (1948)									
Housing Act (PL 81-475) (1950)									
Cooperative Research Act (PL 83-531) (1954)									
National Defense Education Act (PL 85-865) (1958)									
Health Professions Educational Assistance Act (PL 88-129) (1963)									
Amendments (PL 89-290) (1965)									
Higher Education Facilities Act (PL 88-204) (1963)									
Civil Rights Act of 1964 (PL 88-352)									
Economic Opportunity Act of 1964 (PL 88-452)									
Elementary & Secondary Education Act (PL 89-10) (1965)									
Amendments (PL 89-750) (1966)									
Amendments (PL 90-247) (1967)									
Higher Education Act of 1965 (PL 89-329)									
Amendments (PL 90-575) (1968)									
Amendments (PL 96-374) (1980)									
Amendments (PL 98-312) (1984)									
International Education Act (PL 89-698) (1965)									
Elementary & Secondary Education Assistance Programs, Extension (PL 91-230) (1970)									
Environmental Education Act (PL 91-516) (1970)									
Comprehensive Health Manpower Training Act of 1971 (PL 92-257)									
Education Amendments of 1972 (PL 92-318)									
Amendments of 1974 (PL 93-380)									
Amendments of 1978 (PL 95-561)									
Middle Income Student Assistance Act (PL 95-566) (1978)									
Department of Education Organization Act (PL 96-88) (1979)									
Education Consolidation & Improvement Act of 1981 (PL 97-35)									
Amendments (PL 98-[illegible]1) (1983)									
Student Loan Consolidation & Technical Amendments Act of 1983 (PL 98-79)									
Education for Economic Security Act (PL 98-377) (1984)									

000046

IMPLICIT PRICE DEFLATORS FOR GNP

1982 = 100

1944-85

TOTAL AND FEDERAL R&D

1944-85

GROSS NATIONAL PRODUCT

1944-1985

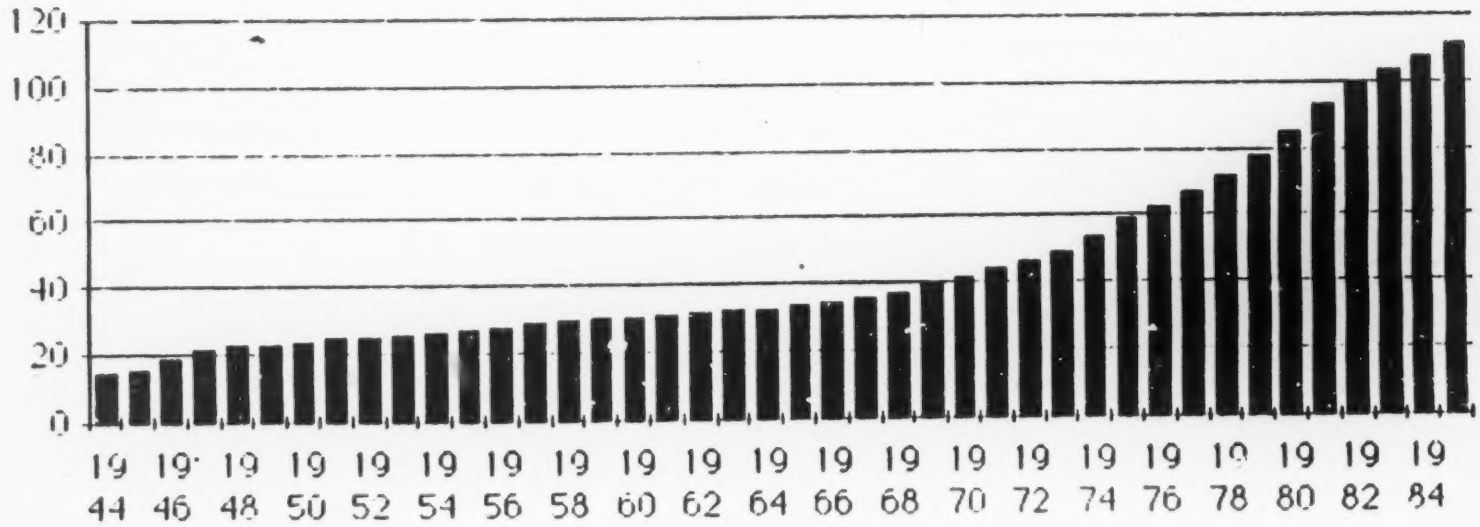
UNEMPLOYMENT RATES FOR ENGINEERS

1962-1984

	AC	AD	AE
1			
2			
3			
4		1982 GNP Deflator	82 Conv Factor
5		153	65359
6		157	63694
7		194	51546
8		221	45249
9		236	42373
10		235	42553
11		239	41841
12		251	39841
13		255	39216
14		259	38610
15		263	38023
16		272	36765
17		281	35587
18		291	34364
19		297	33670
20		304	32895
21		309	32362
22		312	32051
23		319	31348
24		324	30864
25		329	30395
26		338	29586
27		35	28571
28		359	27855
29		377	26525
30		398	25126
31		42	23810
32		444	22523
33		465	21505
34		495	20202
35		54	18519
36		593	16863
37		631	15848
38		673	14859
39		722	13850
40		786	12723
41		857	11669
42		94	10638
43		100	10000
44		1038	09634
45		1081	09251
46		1115	08969
47			

000018

IMPLICIT PRICE DEFLATOR FOR
GROSS NATIONAL PRODUCT: 1982 =100



TOTAL AND FEDERAL RESEARCH AND DEVELOPMENT OUTLAYS IN CURRENT AND CONSTANT 1982 DOLLARS

1944-1985

GROSS NATIONAL PRODUCT IN CURRENT AND CONSTANT 1982 DOLLARS

1944-1985

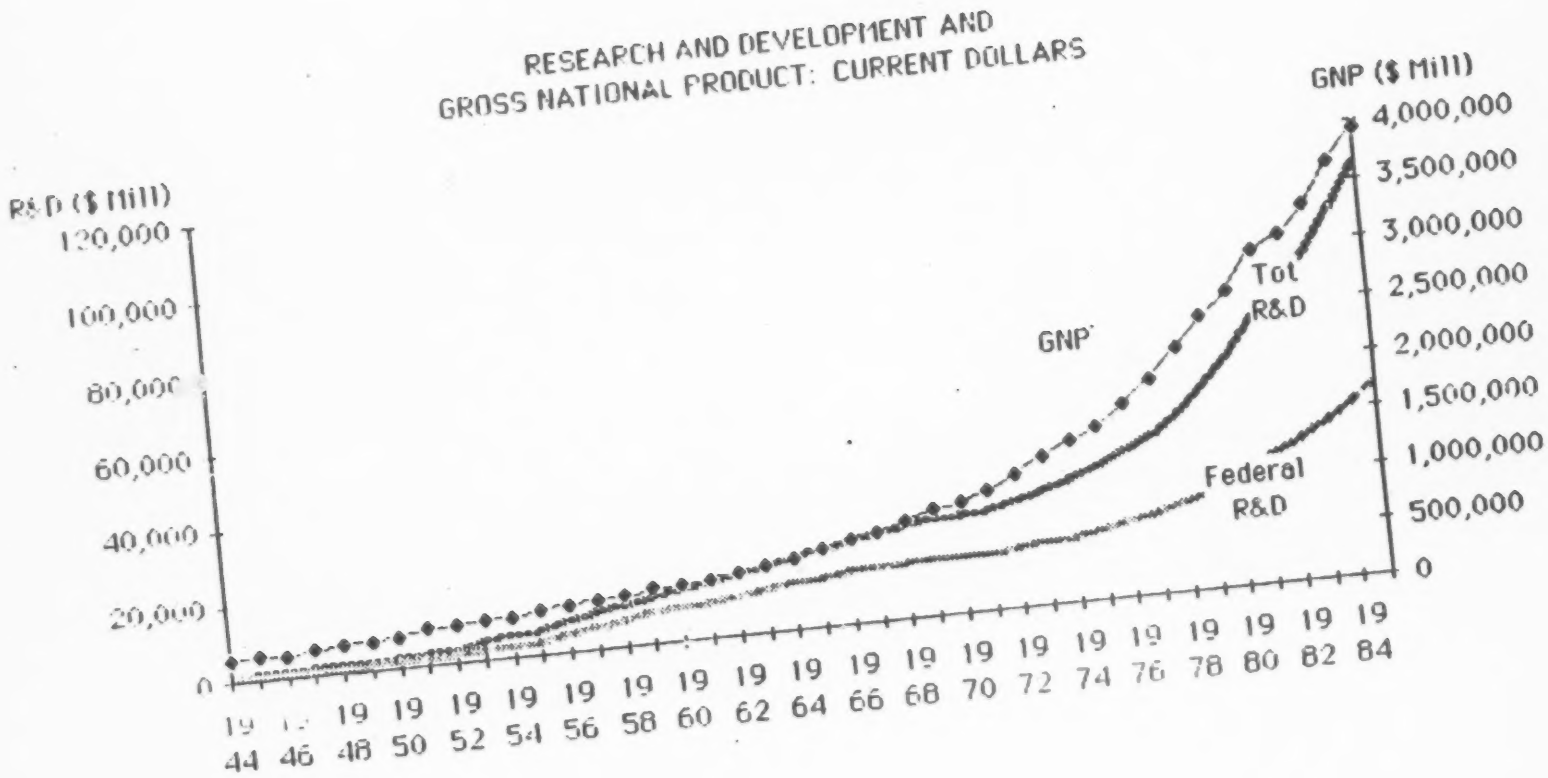
000050

	A	B	C	D	E	F	G	H	I	J	K
1	R&D DATA	In Current Dollars (Millions)						R&D DATA			
2		Total R&D	Federal R&D	GNP ($ Mill)	GNP $ (Bill)	GNP Deflator	B2 Conv Factor		R&D 1982$	Fed R&D 1982	GNP 1982$
3	1944	1,360	940	210,600	210.6	15.3	6.53594771	1944	8,619.6	6,143.8	1,376,470.6
4	1945	1,520	1,070	212,400	212.4	15.7	6.36942675	1945	9,881.5	6,815.5	1,352,866.2
5	1946	1,700	910	209,900	209.9	19.4	5.15463918	1946	9,176.3	4,690.7	1,081,443.3
6	1947	2,260	1,160	233,100	233.1	22.1	4.52488688	1947	10,226.2	5,248.9	1,054,751.1
7	1948	2,610	1,390	259,500	259.5	23.6	4.23728814	1948	11,059.3	5,889.8	1,099,576.3
8	1949	2,610	1,550	258,300	258.3	23.5	4.25531915	1949	11,106.4	6,595.7	1,099,148.9
9	1950	2,870	1,610	266,500	266.5	23.9	4.18410042	1950	12,008.4	6,736.4	1,108,744.8
10	1951	3,360	1,980	330,800	330.8	25.1	3.98406375	1951	13,386.5	7,888.4	1,317,928.3
11	1952	3,750	2,240	348,000	348	26.6	3.92156863	1952	14,706.9	8,784.3	1,364,705.9
12	1953	5,124	2,753	366,800	366.8	25.9	3.86100386	1953	19,783.8	10,629.3	1,416,216.2
13	1954	5,737	3,138	366,800	366.8	26.3	3.80228137	1954	21,813.7	11,931.6	1,394,676.8
14	1955	6,279	3,509	400,000	400.0	27.2	3.67647059	1955	23,084.6	12,900.7	1,470,588.2
15	1956	8,483	4,859	421,700	421.7	28.1	3.55871886	1956	30,186.6	17,291.8	1,500,711.7
16	1957	9,912	6,119	444,000	444.0	29.1	3.43642612	1957	34,061.9	21,027.5	1,525,773.2
17	1958	10,870	6,791	449,700	449.7	29.7	3.36700337	1958	36,599.3	22,865.3	1,514,141.4
18	1959	12,540	8,059	487,900	487.9	30.4	3.28947368	1959	41,250.0	26,509.9	1,604,934.2
19	1960	13,523	8,738	506,500	506.5	30.9	3.23624595	1960	43,763.8	28,278.3	1,639,158.6
20	1961	14,550	9,500	524,600	524.6	31.2	3.20512821	1961	46,634.6	29,807.7	1,681,410.3
21	1962	15,670	9,900	565,000	565.0	31.9	3.13479624	1962	49,122.3	31,034.5	1,771,159.9
22	1963	17,370	11,200	596,700	596.7	32.4	3.08641975	1963	53,611.1	34,567.9	1,841,666.7
23	1964	19,210	12,600	637,700	637.7	32.9	3.03951368	1964	58,399.1	38,297.9	1,939,297.9
24	1965	20,044	13,012	691,100	691.1	33.8	2.95857988	1965	59,301.8	38,497.0	2,044,674.0
25	1966	21,846	13,968	756,000	756.0	35	2.85714286	1966	62,417.1	39,908.6	2,160,000.0
26	1967	23,146	14,595	799,600	799.6	35.9	2.78551532	1967	64,475.5	40,097.5	2,227,298.1
27	1968	24,605	14,928	873,400	873.4	37.7	2.65251989	1968	65,265.3	39,596.8	2,316,210.9
28	1969	25,651	14,895	944,000	944.0	39.8	2.51256281	1969	64,399.5	37,424.6	2,371,859.3
29	1970	26,134	14,892	992,700	992.7	42	2.38095238	1970	62,223.8	35,457.1	2,363,571.4
30	1971	26,676	14,964	1,077,600	1077.6	44.4	2.25225225	1971	60,081.1	33,702.7	2,427,027.0
31	1972	28,477	15,808	1,165,900	1165.9	46.5	2.15053763	1972	61,240.9	33,995.7	2,550,322.6
32	1973	30,718	16,399	1,326,400	1326.4	49.5	2.02020202	1973	62,056.6	33,129.3	2,679,596.0
33	1974	32,864	16,850	1,434,200	1434.2	54	1.85185185	1974	60,859.3	31,203.7	2,655,925.9
34	1975	35,213	18,109	1,549,200	1549.2	59.3	1.68634064	1975	59,381.1	30,537.9	2,612,478.9
35	1976	39,018	19,914	1,718,000	1718.0	63.1	1.58478605	1976	61,835.2	31,559.4	2,722,662.4
36	1977	42,783	21,594	1,918,300	1918.3	67.5	1.4815041	1977	63,570.6	32,086.2	2,850,371.5
37	1978	48,129	23,076	2,163,900	2163.9	72.2	1.38504155	1978	66,660.7	33,049.3	2,997,091.4
38	1979	54,933	26,815	2,417,800	2417.8	78.6	1.27226463	1979	69,889.3	34,115.8	[illegible]
39	1980	62,593	29,451	2,631,700	2631.7	85.7	1.16686114	1980	73,037.3	34,365.2	[illegible]
40	1981	71,840	33,405	2,957,800	2957.8	94	1.06382979	1981	76,425.5	35,537.2	3,146,595.7
41	1982	79,328	36,505	3,069,300	3069.3	100	1	1982	79,328.0	36,505.0	3,069,300.0
42	1983	87,178	40,667	3,304,800	3304.8	105.8	0.96339114	1983	85,986.5	39,178.2	3,185,815.0
43	1984	93,576	45,249	3,561,300	3561.3	108.1	0.92506938	1984	86,586.1	41,858.6	3,386,956.5
44	1985	100,800	50,915	3,940,200	3940.2	111.5	0.89686099	1985	87,578.5	45,663.7	3,540,986.5
45											
46	*Pre 1953 R&D Data Defense only							*Pre 1953 R&D Data Defense only			

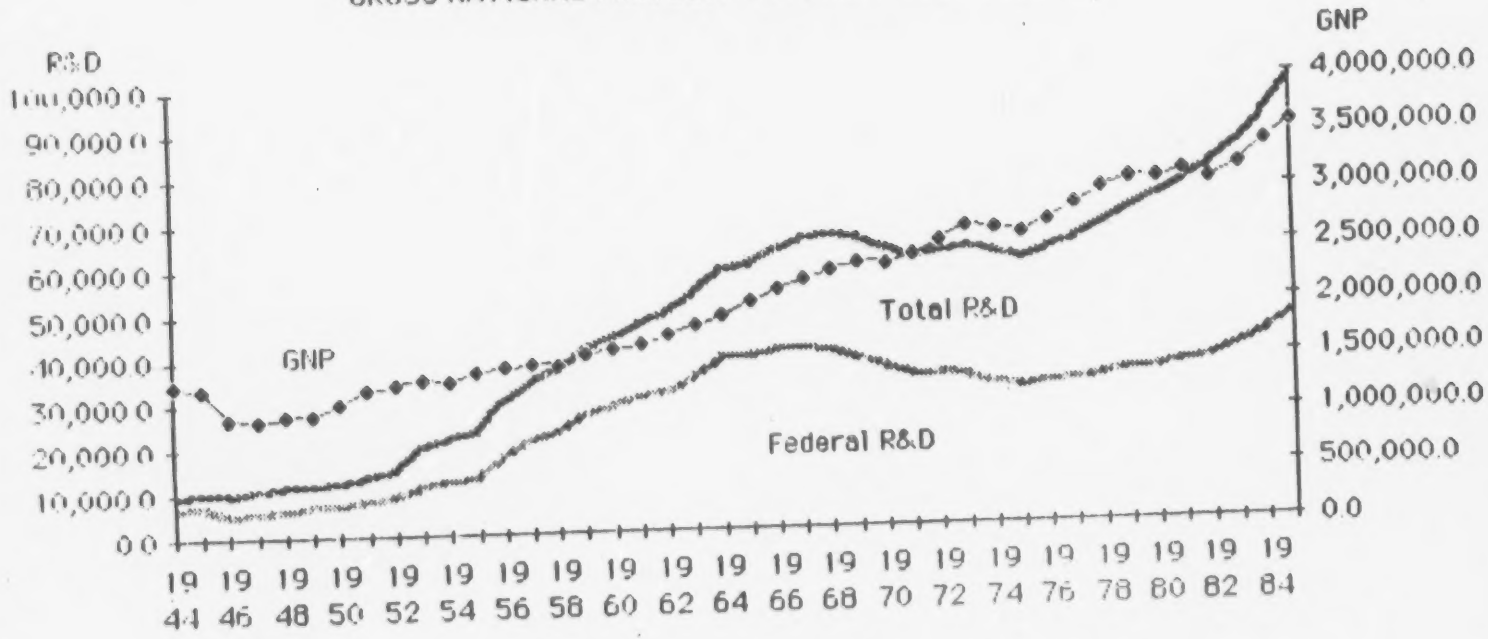
00001

	A	B	C	D	E
1	CONSOLIDATED DATA SPREADSHEET (All Dollar Values are Expressed as Millions of Constant 1982 Dollars)				
2					
3					
4		GNP	Total R&D	Federal R&D	% Eng Unemp
5	1944	1,376,471	9,020	6,144	N.A.
6	1945	1,352,866	9,682	6,815	N.A.
7	1946	1,081,443	9,175	4,691	N.A.
8	1947	1,054,751	10,226	5,249	N.A.
9	1948	1,099,576	11,059	5,890	N.A.
10	1949	1,099,149	11,106	6,596	N.A.
11	1950	1,198,745	12,008	6,736	N.A.
12	1951	1,317,928	13,386	7,888	N.A.
13	1952	1,364,706	14,706	8,784	N.A.
14	1953	1,416,216	19,784	10,629	N.A.
15	1954	1,394,677	21,814	11,932	N.A.
16	1955	1,470,588	23,085	12,901	N.A.
17	1956	1,500,712	30,189	17,292	N.A.
18	1957	1,525,773	34,062	21,027	N.A.
19	1958	1,514,141	36,599	22,865	N.A.
20	1959	1,604,934	41,250	26,510	N.A.
21	1960	1,639,159	43,764	28,278	N.A.
22	1961	1,681,410	46,635	29,808	N.A.
23	1962	1,771,160	49,122	31,034	N.A.
24	1963	1,841,667	53,611	34,568	1.2
25	1964	1,938,298	58,389	38,298	1.5
26	1965	2,044,675	59,302	38,497	1.1
27	1966	2,160,000	62,417	39,909	0.7
28	1967	2,227,298	64,474	40,097	0.6
29	1968	2,316,711	65,265	39,597	0.7
30	1969	2,371,859	64,399	37,425	0.8
31	1970	2,363,571	62,224	35,457	2.2
32	1971	2,427,027	60,081	33,703	2.9
33	1972	2,550,323	61,241	33,996	2
34	1973	2,679,596	62,057	33,129	1
35	1974	2,655,926	60,859	31,204	1.3
36	1975	2,612,479	59,381	30,538	2.6
37	1976	2,722,662	61,835	31,559	2
38	1977	2,850,371	63,571	32,086	1.3
39	1978	2,997,091	66,661	33,069	1.3
40	1979	3,076,081	69,889	34,116	1.4
41	1980	3,070,828	73,037	34,365	0.9
42	1981	3,146,596	76,426	35,537	0.9
43	1982	3,069,300	79,328	36,505	1.9
44	1983	3,183,815	83,987	39,178	1.9
45	1984	3,386,957	89,986	41,058	1.6
	1985	3,540,987	97,578	45,864	N.A.
	1986	N.A.	N.A.	N.A.	N.A.

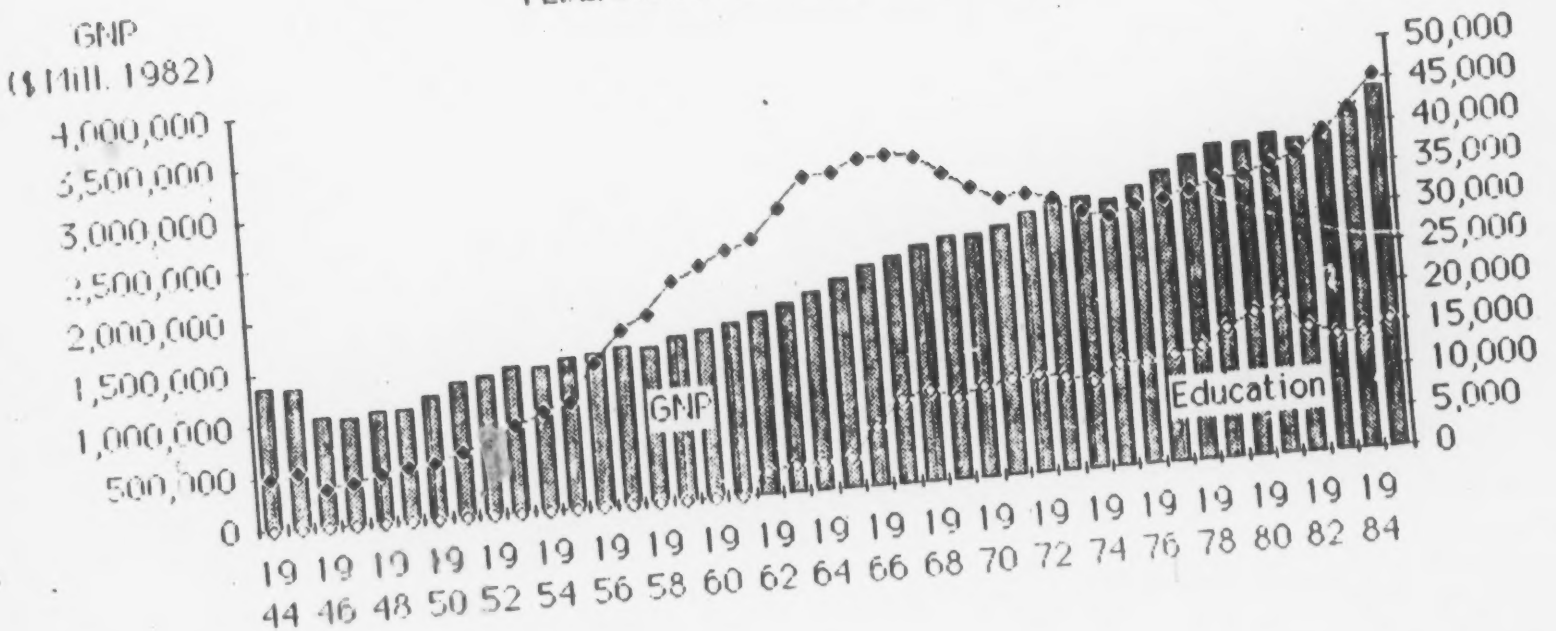
000052


RESEARCH AND DEVELOPMENT AND
GROSS NATIONAL PRODUCT: CURRENT DOLLARS
R&D ($ Mill)
120,000
100,000
80,000
60,000
40,000
20,000
0
GNP ($ Mill)
4,000,000
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
GNP
Tot
R&D
Federal
R&D
19 44
19 46
19 48
19 50
19 52
19 54
19 56
19 58
19 60
19 62
19 64
19 66
19 68
19 70
19 72
19 74
19 76
19 78
19 80
19 82
19 84

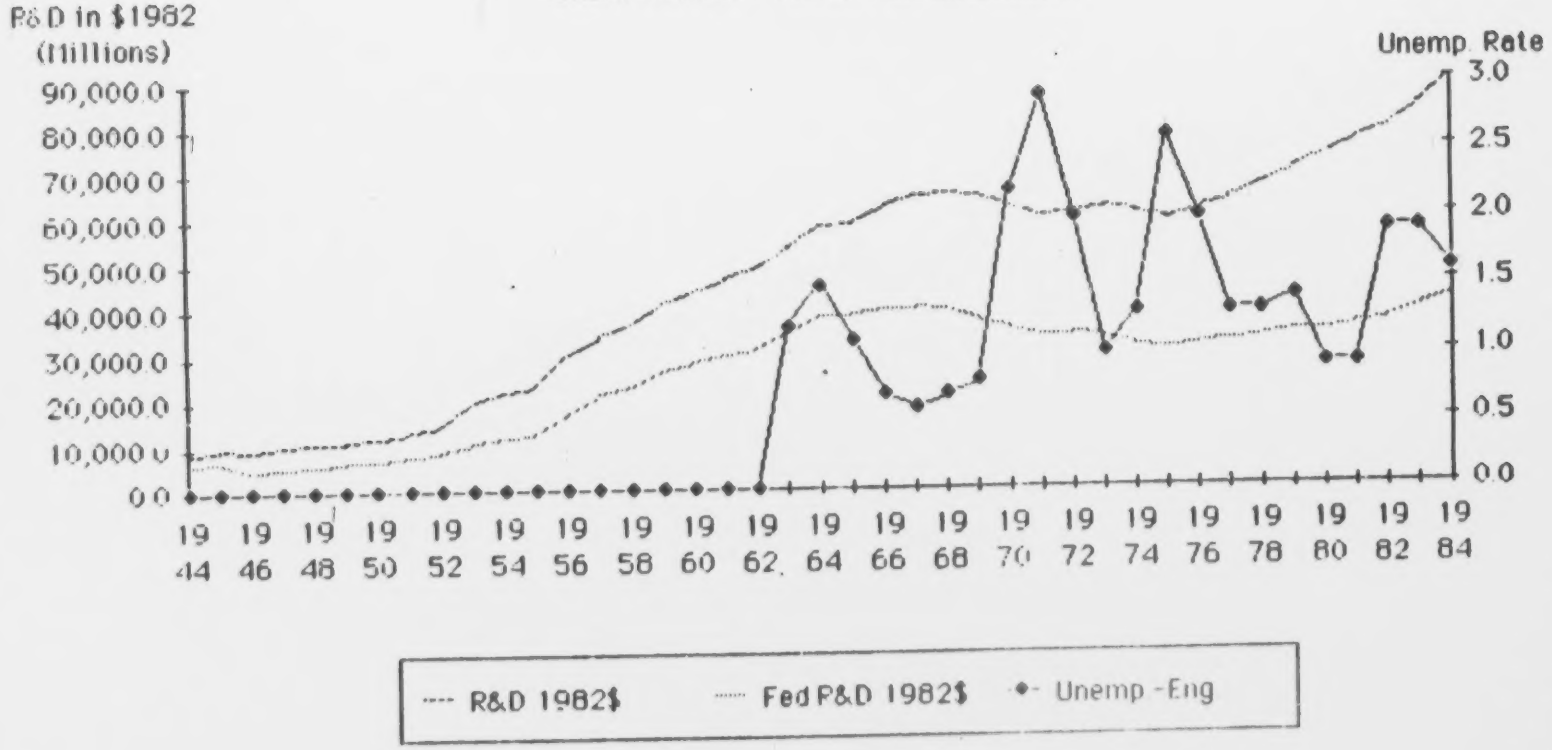
RESEARCH AND DEVELOPMENT AND
GROSS NATIONAL PRODUCT: CONSTANT 1982 DOLLARS



GNP, FEDERAL R&D, AND
FEDERAL OUTLAYS FOR EDUCATION



RESEARCH AND DEVELOPMENT AND
UNEMPLOYMENT RATES FOR ENGINEERS



DIRECT AND INDIRECT FEDERAL SUPPORT OF SCIENCE AND ENGINEERING EDUCATION -

Agency Programs by educational level, Recipients, and S/E or General Education support

OUTLAYS FOR EDUCATION IN CURRENT AND CONSTANT 1982 DOLLARS

1962-1986

00.037

Direct and Indirect Federal Support of Science and Engineering Education

	Science and Engineering			General Support For Educational Institutions		
	Direct to Students	Insti-tutions	Economy Wide	Students	Insti-tutions	Economy Wide
Pre Col.	NSF Teacher Training					
Under grad.	NSF & Other			GI Bill NDEA Loans		
Grad.	NSF, NIH, etc. Fellow-ships & Special Research Grants			Ed. Dept. Programs		
Post Doc.						
Pre-Coll.				School Lunch Program,		
Under grad		NSF, NASA, DOE, USDA, NIH Research Grants and Special Faculty Research; FFRDC's	Federal R&D contracts and some Federal Procurement in S/E intensive Industries	Voc. Training Special Ed.	College Housing Land Grant Library Facilities	
Grad.						
		Tax Expensing of R&D Tax Credit for R&D § 501(c)(3) Not-for-profit Intellectual Property Laws Technology Transfer Acts General Procurement in S/E Areas				Economic Growth Policies Federal Procurement

U.S. OUTLAYS FOR EDUCATION

1962-86

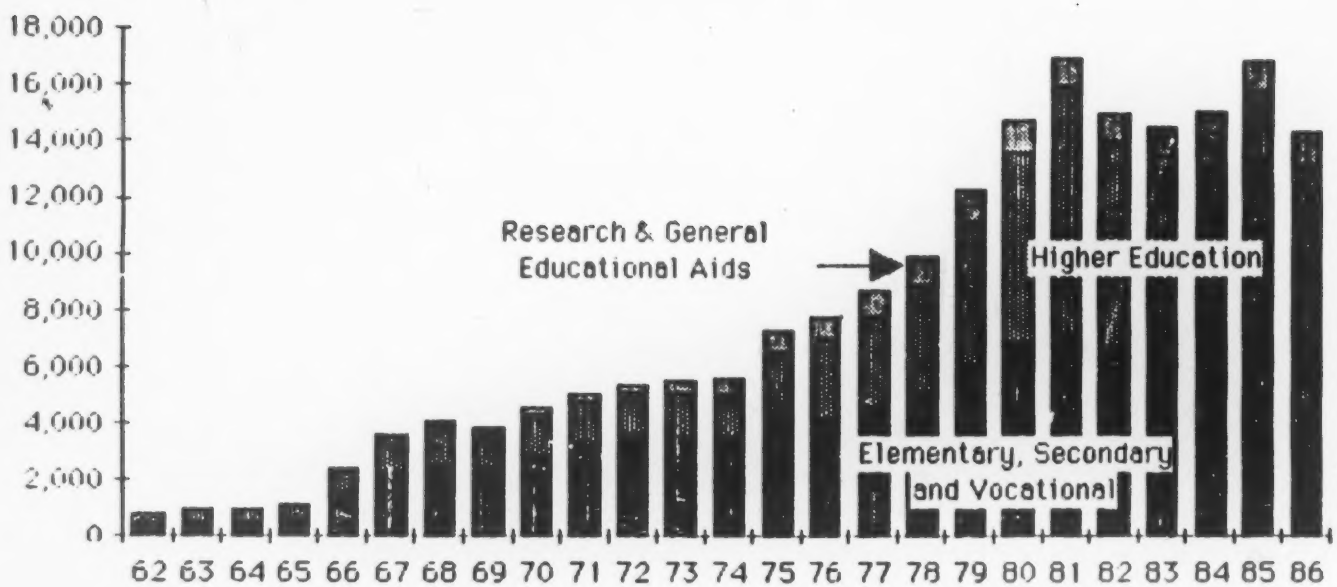
000059

ables

CONSOLIDATED	L	M	N	O
	U.S. Outlays for Elem., Sec & V	U.S. Outlays for Higher Ed.	S. Outlays for Ed Researc	al U.S. Outlays for Educati
1944	N.A.	N.A.	NA	#VALUE!
1945	NA	N.A.	NA	#VALUE!
1946	N.A.	N.A.	NA	#VALUE!
1947	NA	N.A.	NA	#VALUE!
1948	NA	N.A.	NA	#VALUE!
1949	N.A.	N.A.	NA	#VALUE!
1950	NA	N.A.	NA	#VALUE!
1951	NA	N.A.	NA	#VALUE!
1952	N.A.	N.A.	NA	#VALUE!
1953	NA	N.A.	NA	#VALUE!
1954	NA	N.A.	NA	#VALUE!
1955	N.A.	N.A.	NA	#VALUE!
1956	NA	N.A.	NA	#VALUE!
1957	N.A.	N.A.	NA	#VALUE!
1958	N.A.	N.A.	NA	#VALUE!
1959	N.A.	N.A.	NA	#VALUE!
1960	NA	N.A.	NA	#VALUE!
1961	N.A.	N.A.	NA	#VALUE!
1962	1,511	1,025	182	2,718
1963	1,707	1,312	170	3,188
1964	1,763	1,158	188	3,109
1965	2,130	1,219	272	3,621
1966	4,651	2,014	349	7,014
1967	6,437	3,231	435	10,103
1968	6,676	3,695	637	11,008
1969	6,211	3,095	528	9,834
1970	6,893	3,298	845	11,036
1971	7,511	3,227	664	11,403
1972	7,929	3,112	686	11,727
1973	7,222	3,095	867	11,184
1974	6,620	2,683	1,150	10,454
1975	7,337	3,693	1,315	12,346
1976	6,656	4,474	1,223	12,353
1977	6,892	4,768	1,315	12,975
1978	7,183	5,154	1,416	13,752
1979	7,790	6,435	1,439	15,664
1980	8,061	7,848	1,397	17,306
1981	7,614	9,432	1,061	18,106
1982	6,780	7,206	1,041	15,027
1983	6,064	6,966	1,016	14,046
1984	6,031	6,830	1,119	13,981
1985	6,846	7,364	1,005	15,215
1986	4,227	7,362	1,018	12,608

60.060

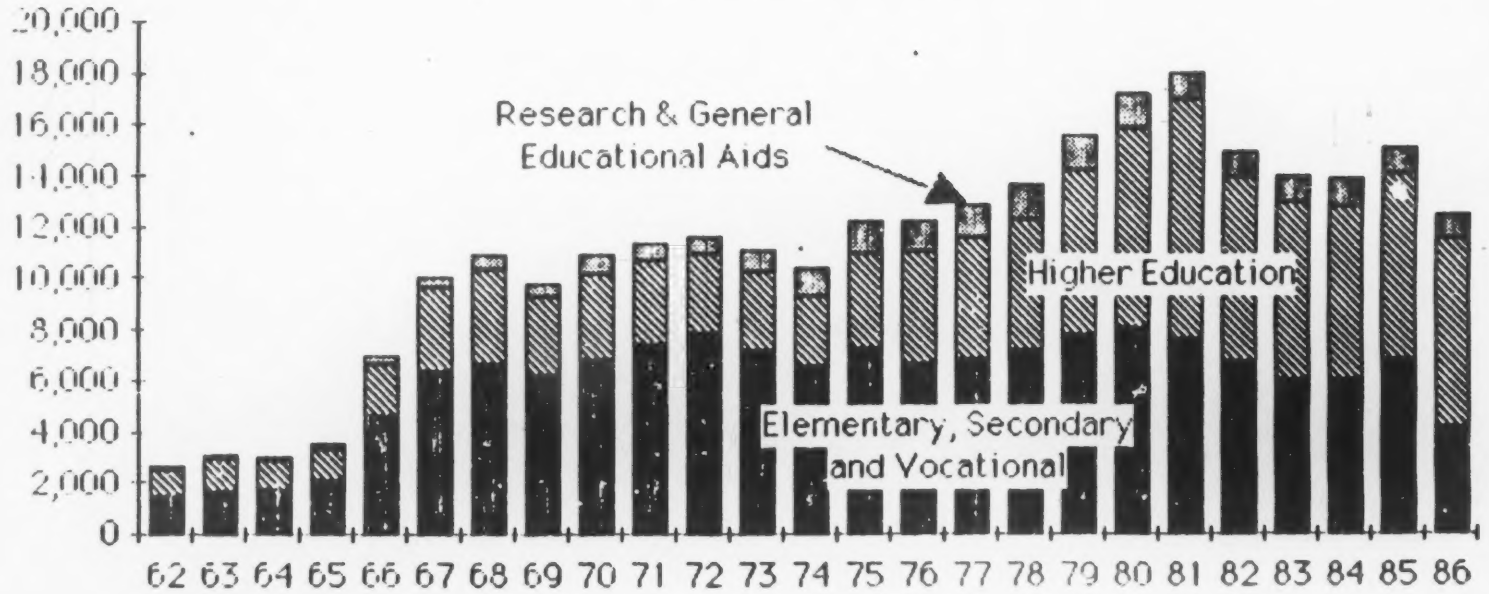
U.S. OUTLAYS FOR EDUCATION



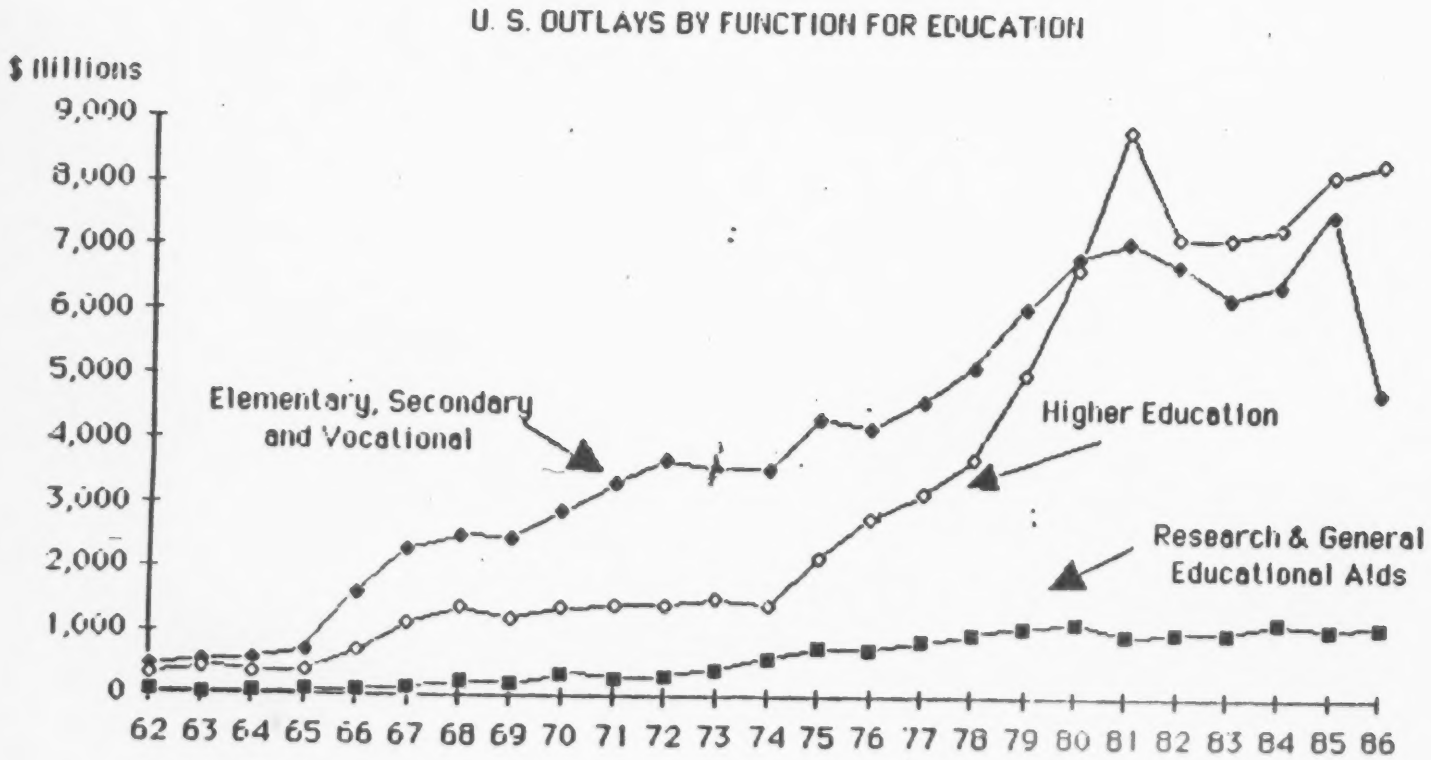
Source - OMB Budget lines # 501, 502, 503

000061

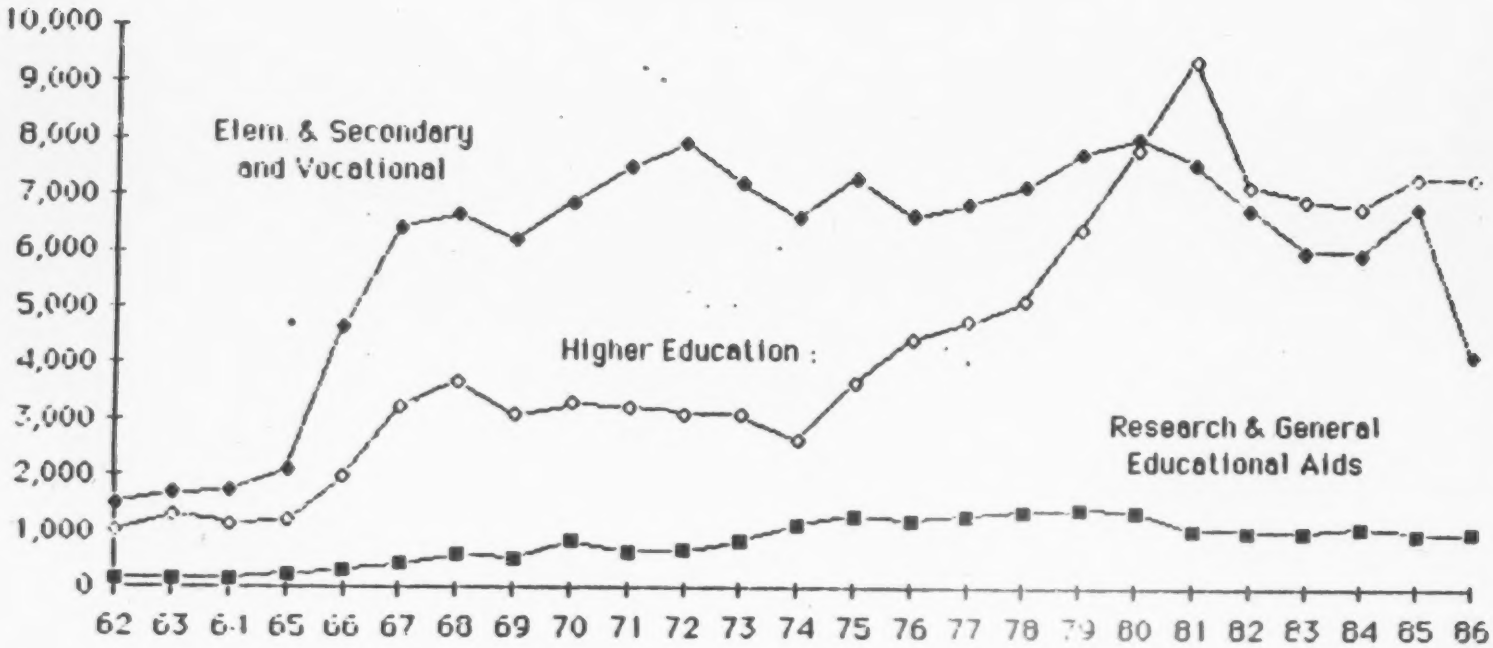
TOTAL OUTLAYS FOR EDUCATION BY FUNCTION
CONSTANT 1982 DOLLARS



Source: OMB budget lines 501, 502, 503


U. S. OUTLAYS BY FUNCTION FOR EDUCATION
$ Millions
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
Elementary, Secondary and Vocational
Higher Education
Research & General Educational Aids
62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86

U.S. OUTLAYS BY FUNCTION FOR EDUCATION
CONSTANT 1982 DOLLARS



FEDERAL OBLIGATIONS TO UNIVERSITIES AND COLLEGES BY TYPE OF ACTIVITY AND AGENCY

1963-1985

000065

I09,17,25,33,41,49,57,65,73,81,89,97,A5,B3.

FEDERAL ACADEMIC S/E OBLIGATIONS TO UNIV/COLLEGES BY AGENCY & ACTIVITY
MILLIONS OF DOLLARS

TOTAL ACADEMIC S/E

YEAR	TOTAL	DOD	DOE	HHS	NASA	NSF	OTHER
1963	1328.5	218.0	76.1	581.0	87.4	256.3	109.7
1964	1528.6	258.1	79.9	683.8	107.6	277.5	121.7
1965	1816.2	267.9	84.4	356.5	134.3	325.2	147.9
1966	2163.5	278.0	96.9	1109.2	142.2	374.5	162.7
1967	2323.8	264.1	109.6	1251.0	131.5	394.5	173.1
1968	2349.8	243.1	119.7	1229.4	129.8	422.8	205.0
1969	2361.4	278.7	121.0	1261.8	127.2	367.0	205.7
1970	2187.6	265.5	114.5	1036.7	131.2	387.4	252.3
1971	2343.1	249.0	105.8	1142.3	134.1	387.7	324.2
1972	2599.0	243.9	95.3	1318.4	119.0	458.7	363.7
1973	2464.4	232.9	96.2	1225.0	111.4	419.6	379.3
1974	2737.0	184.4	99.5	1515.4	98.9	449.6	389.2
1975	2805.8	190.5	124.3	1467.3	108.0	490.5	425.2
1976	2959.7	211.9	144.1	1522.2	118.9	496.3	466.3
1977	3351.3	267.3	208.1	1686.5	121.0	565.8	502.6
1978	3959.8	452.3	267.2	1900.8	130.5	607.1	601.9
1979	4472.7	528.7	273.9	2216.0	143.9	671.6	638.6
1980	4790.3	555.9	309.6	2231.1	171.2	726.3	746.2
1981	5062.1	725.9	310.4	2363.6	183.5	694.9	783.8
1982	5178.9	857.2	288.2	2332.8	176.9	728.0	795.8
1983	5680.0	940.1	320.0	2602.2	203.8	798.8	815.1
1984	6390.0	1036.2	348.4	2934.1	216.6	935.5	919.2
1985	7260.4	1061.1	451.7	3440.0	251.0	1078.7	977.9
TOTAL	78113.9	9810.7	4244.8	37957.1	3279.9	12314.3	10507.1

00.068

I09,17,25,33,41,49,57,65,73,81,89,97,A5,83.

FEDERAL AGENCY SUPPORT IN CONSTANT 1982 DOLLARS

YEAR	TOTAL	DOD	DOE	HHS	NASA	NSF	OTHER
1963	4099.75	672.75	234.84	1792.97	269.72	790.94	338.53
1964	4646.18	784.49	242.86	2078.41	327.05	843.46	369.91
1965	5374.14	792.72	249.74	2534.38	397.39	962.27	437.64
1966	6181.12	794.25	276.84	3168.98	406.27	1069.95	464.83
1967	6474.11	735.78	305.35	3485.29	366.36	1099.08	482.26
1968	6231.67	644.70	317.44	3260.37	344.23	1121.27	543.66
1969	5934.20	700.37	304.07	3170.90	319.65	922.27	516.92
1970	5208.68	632.16	272.62	2468.38	312.39	922.40	600.73
1971	5276.66	560.75	238.26	2572.46	301.99	873.10	730.10
1972	5589.15	524.51	204.94	2835.22	255.91	986.43	782.14
1973	4978.09	470.46	194.32	2474.50	225.03	847.59	766.19
1974	5068.65	341.49	184.26	2806.37	183.15	832.61	720.76
1975	4731.42	321.24	209.61	2474.31	182.12	827.13	717.01
1976	4690.53	335.82	228.37	2412.38	188.43	786.54	738.99
1977	4979.70	397.18	309.22	2505.97	179.79	840.72	746.81
1978	5484.32	626.44	370.07	2632.61	180.74	840.83	833.63
1979	5689.27	672.51	348.40	2818.75	183.04	854.28	812.30
1980	5589.80	648.68	361.27	2661.82	199.77	847.52	870.74
1981	5385.06	772.21	330.20	2514.40	195.21	739.23	833.81
1982	5178.90	857.20	288.20	2332.80	176.90	728.00	795.80
1983	5472.06	905.68	308.28	2506.93	196.34	769.56	785.26
1984	5911.20	958.56	322.29	2714.25	200.37	865.40	850.32
1985	6511.85	951.70	405.13	3085.34	225.12	967.49	877.08

60967

I09,17,25,33,41,49,57,65,73,81,89,97,A5,B3.

FELLOWSHIPS, TRAINEESHIPS AND TRAINING GRANTS

YEAR	TOTAL	DOD	DOE	HHS	NASA	NSF	OTHER
1966	365.5		3.2	289.9	25.0	47.5	0.0
1967	447.2		3.7	379.2	15.0	49.4	0.0
1968	440.9		3.6	387.0	0.9	49.4	0.0
1969	436.3		5.5	375.7	1.3	53.8	0.0
1970	429.4		5.0	369.6	2.1	52.7	0.0
1971	421.0	0.0	2.6	361.4	1.0	42.3	13.7
1972	387.9	0.0	2.0	346.6	1.1	28.8	9.4
1973	287.2	0.0	2.3	256.8	1.3	16.4	10.4
1974	326.6	0.0	0.5	301.5	1.2	14.4	9.0
1975	201.3	0.0	0.7	181.7	1.3	9.7	7.9
1976	174.9	0.0	0.1	155.6	1.3	13.4	4.5
1977	184.7	0.0	0.2	165.9	1.4	14.8	2.4
1978	205.9	0.0	0.7	184.2	1.3	11.7	8.0
1979	204.9	0.0	1.9	182.3	1.8	14.1	4.8
1980	210.1	0.0	0.0	187.6	2.8	13.8	5.9
1981	205.4	0.0	0.0	183.5	3.7	14.8	3.4
1982	176.6	0.0	0.3	151.9	4.2	17.5	2.7
1983	189.6	0.7	0.2	164.0	5.2	16.2	3.3
1984	194.9	0.0	0.6	164.6	5.3	21.8	2.6
1985	254.5	0.8	0.4	210.9	5.6	25.8	11.0

000068

I09,17,25,33,41,49,57,65,73,81,89,97,A5,83.

FELLOWSHIPS, TRAINEESHIPS AND TRAINING GRANTS IN CONSTANT 1982 DOLLARS

YEAR	TOTAL	DOD	DOE	HHS	NASA	NSF	OTHER
1966	1044.23	0.00	9.14	828.24	71.43	135.71	0.00
1967	1245.90	0.00	10.31	1056.45	41.79	137.63	0.00
1968	1169.27	0.00	9.55	1026.32	2.39	131.01	0.00
1969	1096.42	0.00	13.82	944.13	3.27	135.20	0.00
1970	1022.40	0.00	11.91	880.02	5.00	125.48	0.00
1971	948.09	0.00	5.86	813.87	2.25	95.26	30.85
1972	834.18	0.00	4.30	745.36	2.37	61.93	20.21
1973	580.14	0.00	4.65	518.74	2.63	33.13	21.01
1974	604.83	0.00	0.93	558.35	2.22	26.67	16.67
1975	339.45	0.00	1.18	306.40	2.19	16.36	13.32
1976	277.18	0.00	0.16	246.59	2.06	21.24	7.13
1977	274.45	0.00	0.30	246.51	2.08	21.99	3.57
1978	285.17	0.00	0.97	255.12	1.80	16.20	11.08
1979	260.63	0.00	2.42	231.89	2.29	17.94	6.11
1980	245.17	0.00	0.00	218.91	3.27	16.10	6.88
1981	218.50	0.00	0.00	195.21	3.94	15.74	3.62
1982	176.60	0.00	0.30	151.90	4.20	17.50	2.70
1983	182.66	0.67	0.19	158.00	5.01	15.61	3.18
1984	180.30	0.00	0.56	152.27	4.90	20.17	2.41
1985	228.26	0.72	0.36	189.16	5.02	23.14	9.87

600069

	A	B	C	D	E	F
1	FEDERAL OBLIGATIONS TO UNIVERSITIES AND COLLEGES BY TYPE OF ACTIVITY					
2						
3						
4						
5		Total Obligations	Total Academic S/E	R&D	Fellowships, Etc.	
6	1963	1413.015	1328.511	829.524	NA	
7	1964	1624.963	1528.604	975.597	NA	
8	1965	2305.455	1816.171	1094.963	NA	
9	1966	3009.95	2163.504	1252.146	365.56	
10	1967	3317.709	2323.795	1301.242	447.236	
11	1968	3586.637	2349.817	1396.305	440.895	
12	1969	3462.37	2361.399	1474.681	436.27	
13	1970	3236.612	2187.579	1446.618	429.408	
14	1971	3408.596	2343.129	1551.391	421.029	
15	1972	4144.57	2598.989	1852.963	387.888	
16	1973	3839.102	2464.362	1870.69	287.21	
17	1974	4480.372	2736.984	2084.204	326.6	
18	1975	4547.197	2805.783	2246.088	201.273	
19	1976	5402.764	2959.656	2430.97	174.871	
20	1977	6489.735	3351.337	2803.017	184.671	
21	1978	7471.843	3959.832	3385.77	205.925	
22	1979	7603.908	4472.659	3873.514	204.866	
23	1980	8298.118	4790.286	4159.857	210.121	
24	1981	8640.193	5062.124	4410.199	205.448	
25	1982	8776.258	5178.89	4553.755	176.582	
26	1983	9337.133	5679.978	5023.677	189.616	
27	1984	10118.46	6389.968	5635.612	194.895	
28	1985	10984.597	7260.447	6379.151	254.54	
29						
30						
31						
32						
33						
34						
35						
36			CONSTANT 1982 DOLLARS			
37		Total Obligations	Total Academic S/E	R&D	Fellowships Etc	
38	1963	4,381.18	4,100.34	2,560.26	#VALUE!	1963
39	1964	4,939.10	4,646.21	2,965.34	#VALUE!	1964
40	1965	6,820.57	5,373.29	2,239.59	#VALUE!	1965
41	1966	8,599.86	6,181.44	3,577.36	1,044.46	1966
42	1967	9,241.53	6,472.97	3,624.63	1,245.78	1967
43	1968	8,983.12	6,232.94	3,709.03	1,189.48	1968
44	1969	8,699.42	5,933.18	3,705.23	1,096.16	1969
45	1970	7,706.22	5,208.52	3,444.33	1,022.40	1970
46	1971	7,879.72	5,277.32	3,494.12	948.26	1971
47	1972	8,913.05	5,589.22	3,984.87	834.17	1972
48	1973	7,755.76	4,978.51	3,779.17	580.22	1973
49	1974	8,296.99	5,066.49	3,859.64	604.81	1974
50	1975	7,568.12	4,731.51	3,787.67	339.41	1975
51	1976	8,562.23	4,690.42	3,852.57	277.13	1976
52	1977	9,642.99	4,979.70	4,164.96	274.40	1977
53	1978	10,348.81	5,484.53	4,589.43	285.21	1978
54	1979	9,674.18	5,690.41	4,928.13	260.64	1979
55	1980	9,682.75	5,589.60	4,853.98	245.18	1980
56	1981	9,191.69	5,335.24	4,691.70	218.56	1981
57	1982	8,776.26	5,178.89	4,553.76	176.58	1982
58	1983	8,995.31	5,472.04	4,839.77	182.67	1983
59	1984	9,360.28	5,911.16	5,213.33	180.29	1984
60	1985	9,851.66	6,511.61	5,721.21	228.29	1985

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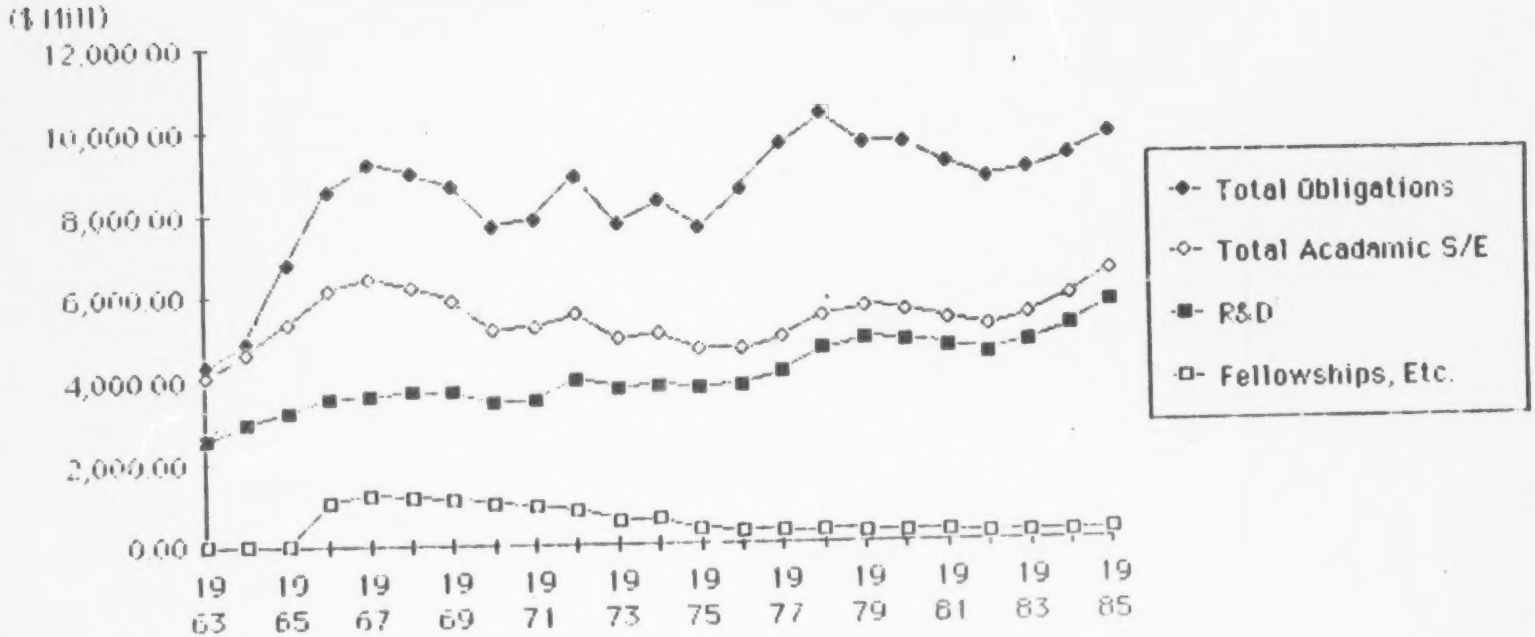
FEDERAL OBLIGATIONS TO UNIVERSITIES AND COLLEGES
BY TYPE OF ACTIVITY: 1982 CONSTANT DOLLARS



12000

	G	H	I	J	K
1					
2					
3					
4					
5	Academic by Agency	US Academic by Agency	DO Academic by Agency	DOE Academic by Agency	HHS Academic by Agency: NA
6	104	218	76.1	581	87.4
7	115	258.1	79.9	683.8	107.6
8	135.6	267.9	84.4	856.5	134.3
9	141	278	96.9	1109.2	142.2
10	144.8	264.1	109.6	1251	131.5
11	144.2	243.1	119.7	1229.4	129.8
12	155.9	278.7	212	1261.8	127.2
13	182.1	285.5	114.5	1036.7	131.2
14	214.6	249	105.8	1142.3	134.1
15	238.6	243.9	95.3	1318.4	119
16	256.8	232.9	96.2	1225	111.4
17	260.7	184.4	99.5	1515.4	98.9
18	290.7	190.5	124.3	1467.3	108
19	328.6	211.9	144.1	1522.2	118.9
20	343.2	267.3	208.1	1686.5	121
21	391.7	452.3	267.2	1900.8	130.5
22	422.5	528.7	273.9	2216	143.9
23	444.1	555.9	309.6	2281.1	171.2
24	491.4	725.9	310.4	2363.6	183.5
25	529.7	857.2	288.2	2332.8	176.9
26	466	940.1	320	2602.2	203.8
27	607.4	1036.2	348.4	2934.1	216.6
28	655.1	1061.1	451.7	3440	251
29					
30					
31					
32					
33					
34					
35					
36					
37	Academic by Agency	US Academic by Agency:	DO Academic by Agency	DOE Academic by Agency	HHS Academic by Agency: NA
38	320.99	672.84	234.68	1,793.21	259.75
39	349.54	784.50	242.86	2,078.42	327.05
40	401.18	792.60	249.70	2,534.02	397.34
41	402.86	794.29	276.86	3,169.14	406.29
42	403.34	735.65	305.29	3,484.68	366.30
43	382.49	644.83	317.51	3,261.01	344.30
44	391.71	700.25	532.66	3,170.35	319.60
45	433.57	632.14	272.62	2,468.33	312.38
46	483.33	560.81	238.29	2,572.75	302.03
47	513.12	524.52	204.95	2,835.27	255.91
48	518.79	470.51	194.34	2,474.75	225.05
49	482.78	341.48	184.26	2,808.30	183.15
50	490.22	321.25	209.61	2,474.37	182.12
51	520.76	335.82	229.37	2,412.75	188.43
52	509.96	397.18	309.21	2,505.94	179.79
53	542.52	626.45	370.08	2,632.69	180.75
54	537.53	672.65	348.47	2,819.34	183.08
55	518.20	648.66	351.26	2,661.73	199.77
56	522.77	772.23	330.21	2,514.47	195.21
57	529.70	857.20	288.20	2,332.30	176.90
58	448.94	905.68	308.29	2,506.94	196.34
59	561.59	958.56	322.29	2,714.25	200.37
60	557.53	951.66	405.11	3,035.20	225.11

00072

	L	M	N	O
1				
2				
3				
4				
5	Academic by Agency NSF		HHS Fellowships	NSF Fellowships
6	2563		NA	NA
7	2775		NA	NA
8	3252		NA	NA
9	3745		2899	475
10	3945		3792	494
11	4228		387	494
12	367		3757	538
13	3874		3696	527
14	3877		3614	423
15	4567		3466	286
16	4196		2568	166
17	4496		3015	144
18	4905		1817	97
19	4963		1556	134
20	5658		1659	146
21	6071		1842	117
22	6715		1823	141
23	7253		1876	135
24	6949		1835	148
25	728		1519	175
26	7988		164	162
27	9355		1646	218
28	10787		2109	258
29				
30				
31				
32				
33				
34				
35				
36				
37	Academic by Agency NSF		HHS Fellowships	NSF Fellowships
38	79105	1963	#VALUE!	#VALUE!
39	84347	1964	#VALUE!	#VALUE!
40	96213	1965	#VALUE!	#VALUE!
41	1,070.00	1966	828.29	135.71
42	1,098.89	1967	1,056.27	137.60
43	1,121.49	1968	1,026.53	131.03
44	922.11	1969	943.97	135.18
45	922.39	1970	830.00	125.48
46	873.20	1971	813.96	95.27
47	986.45	1972	745.38	61.94
48	847.68	1973	518.79	33.54
49	832.59	1974	558.33	26.97
50	827.15	1975	306.41	16.35
51	788.53	1976	246.59	21.24
52	840.71	1977	246.51	21.90
53	840.86	1978	255.12	16.20
54	854.45	1979	231.93	17.94
55	847.49	1980	218.90	18.10
56	739.25	1981	195.21	15.74
57	728.00	1982	151.90	17.50
58	769.55	1983	158.00	15.61
59	885.40	1984	152.27	20.17
60	967.44	1985	139.15	23.14

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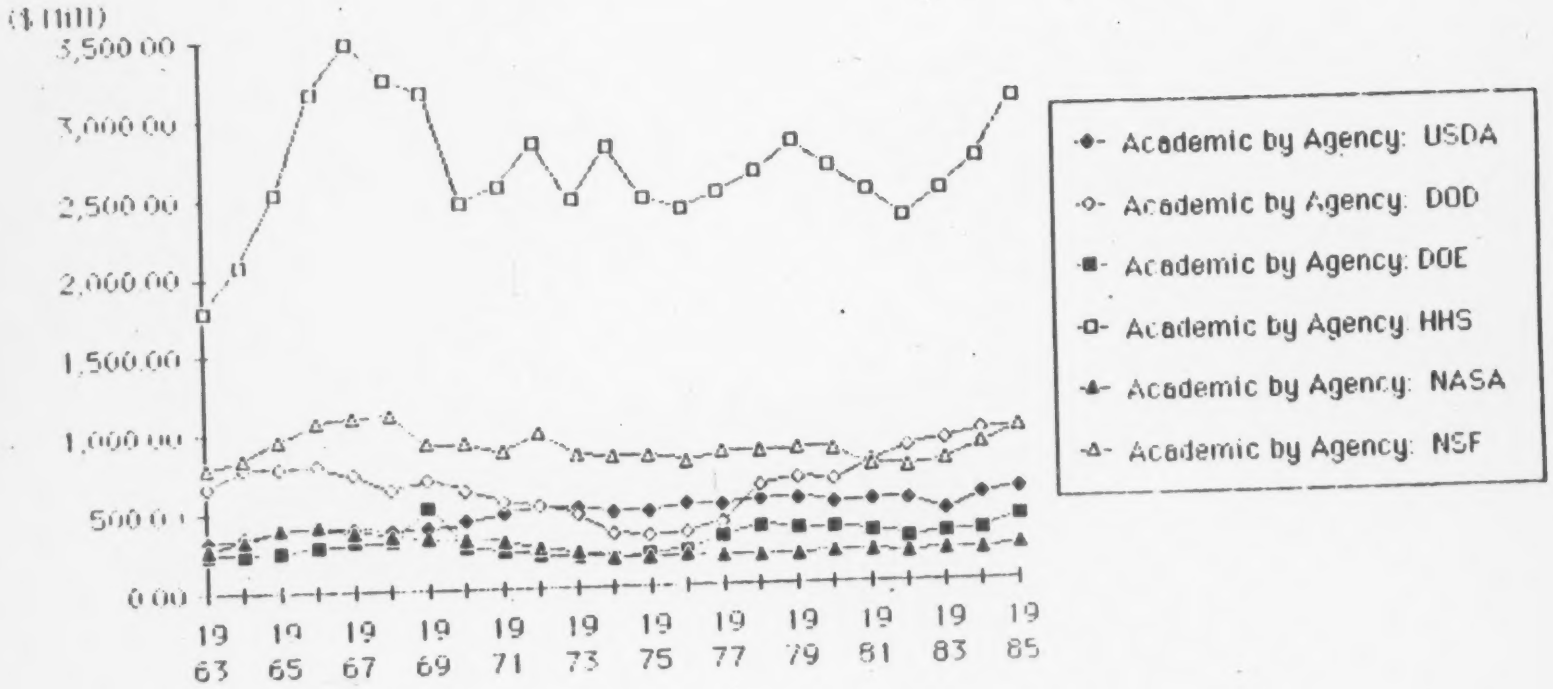
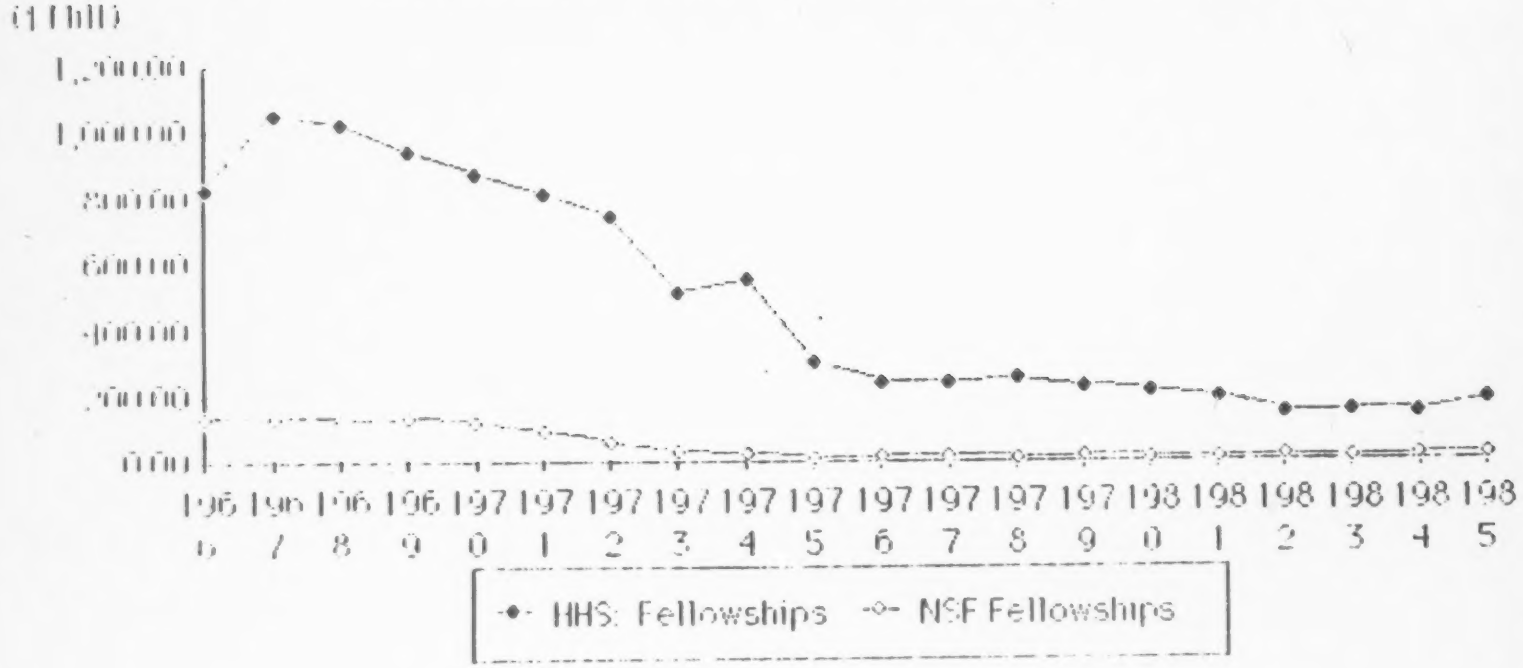
FEDERAL ACADEMIC SUPPORT TO UNIVERSITIES AND COLLEGES BY AGENCY: CONSTANT 1982 DOLLARS



FEDERAL SUPPORT TO UNIVERSITIES AND COLLEGES
FELLOWSHIPS BY MAJOR AGENCY (CONSTANT 1982 DOLLARS)



NSF OBLIGATIONS FOR SCIENCE AND ENGINEERING EDUCATION,

BY EDUCATION LEVEL

Current and Constant 1982 Dollars

1952-1986

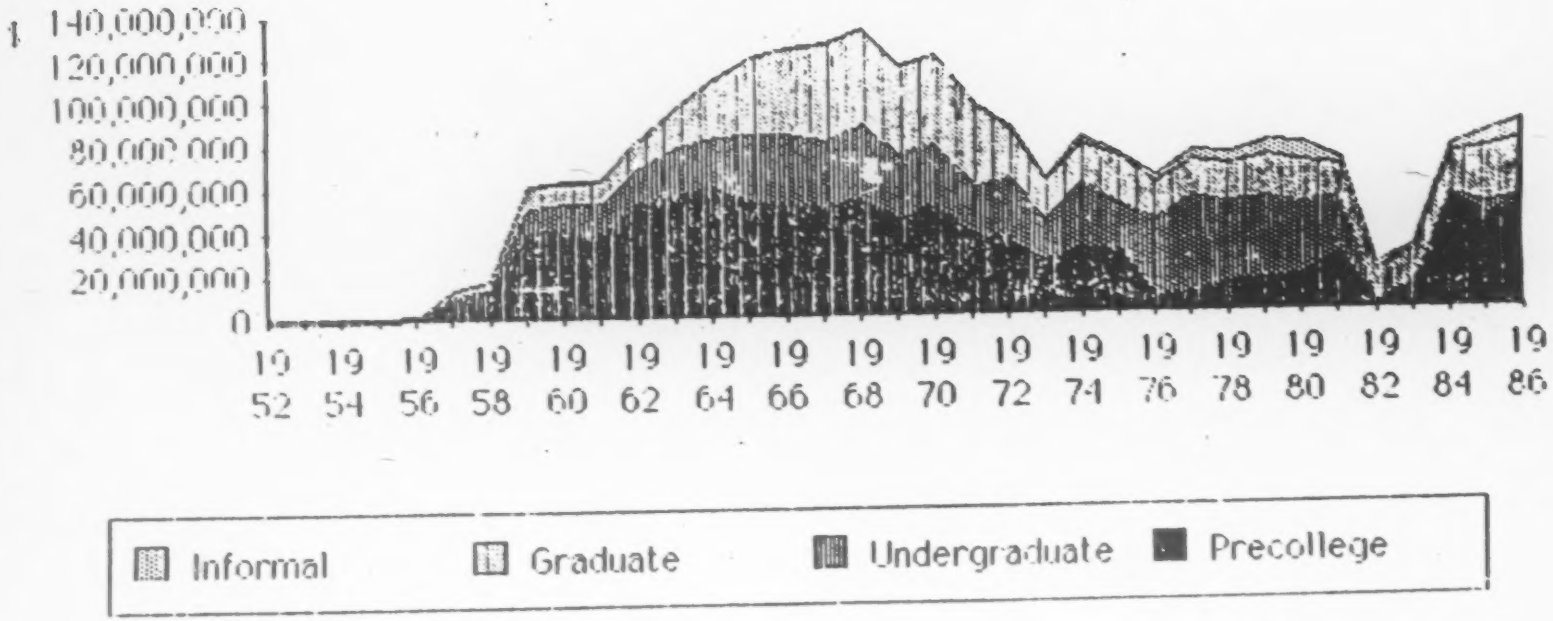
68.076

PUBLISHER'S NOTE

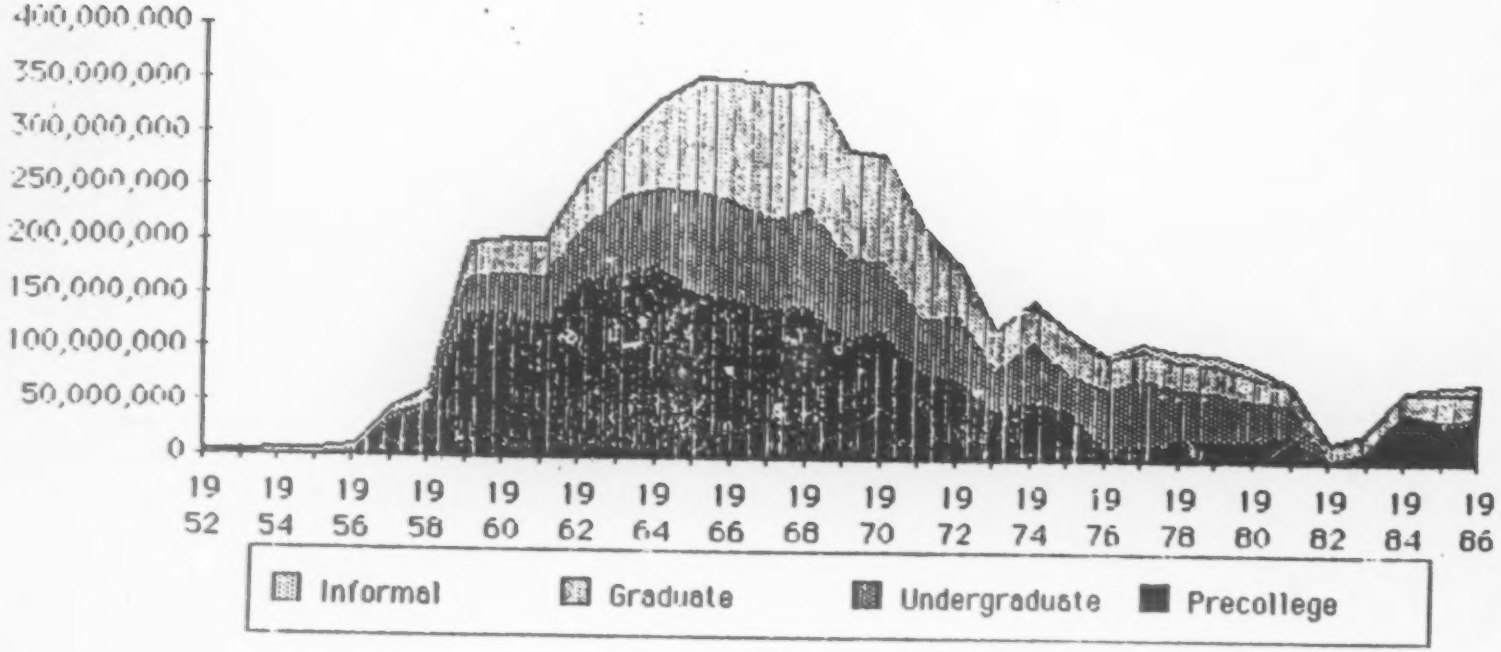
THE FOLLOWING PAGES ARE UNAVAILABLE FOR FILMING:

00077 AND 00078

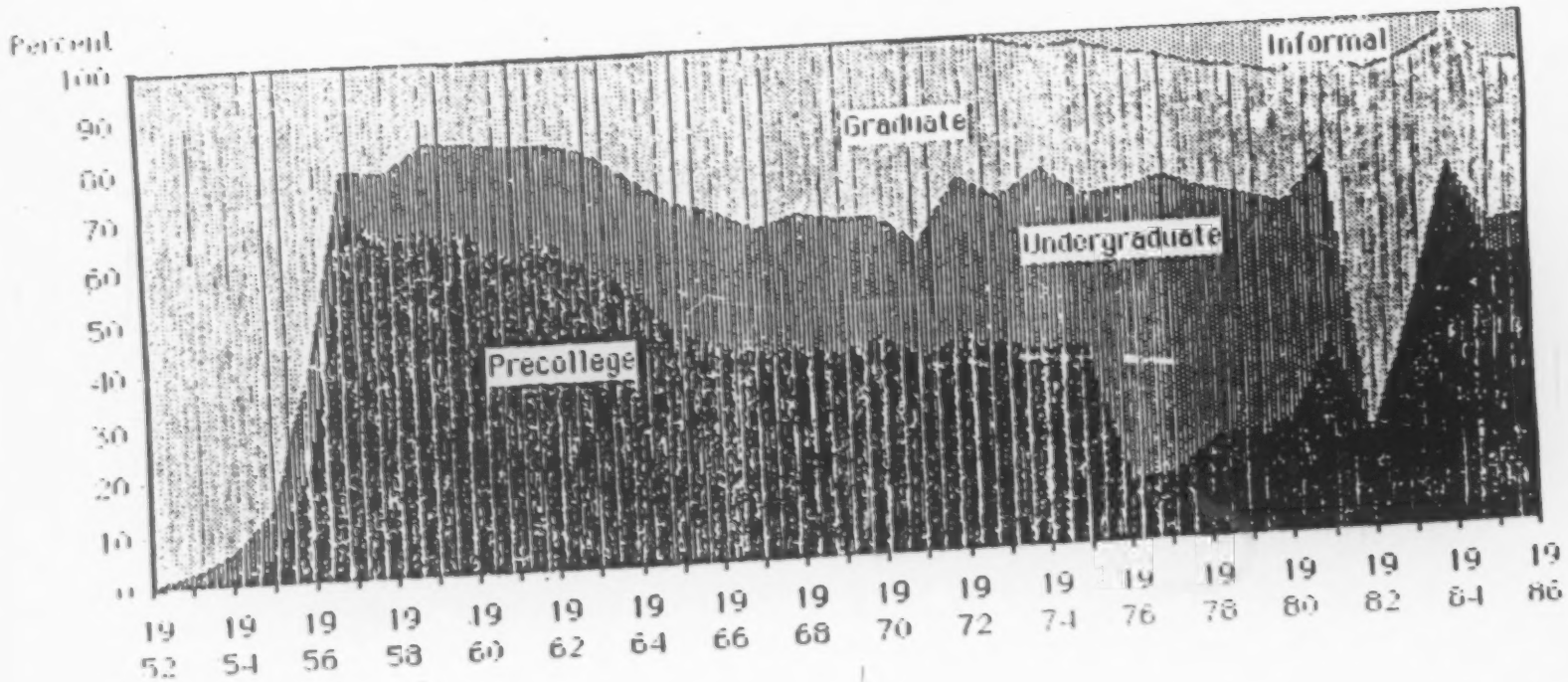
NATIONAL SCIENCE FOUNDATION
EDUCATION OBLIGATIONS



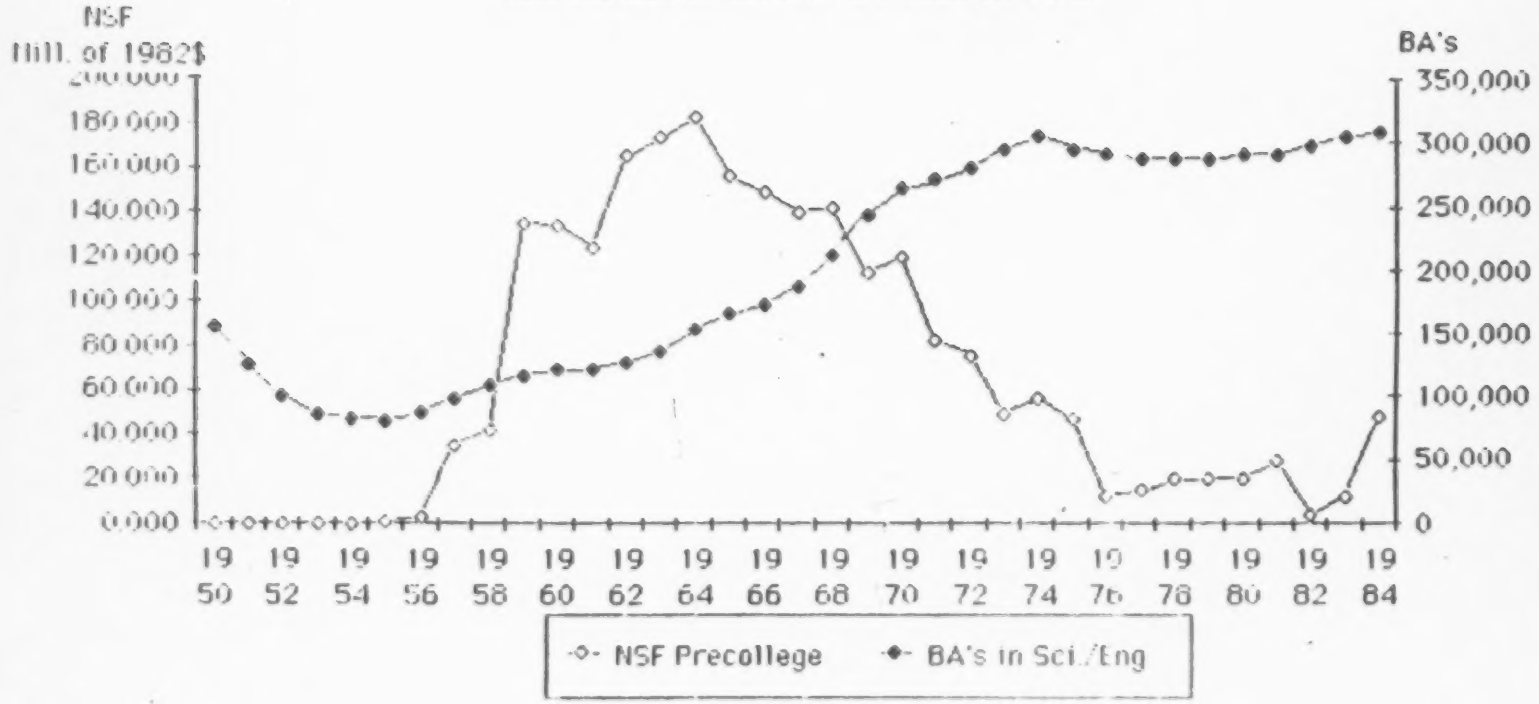
NATIONAL SCIENCE FOUNDATION
OBLIGATIONS FOR EDUCATION: CONSTANT 1982 DOLLARS



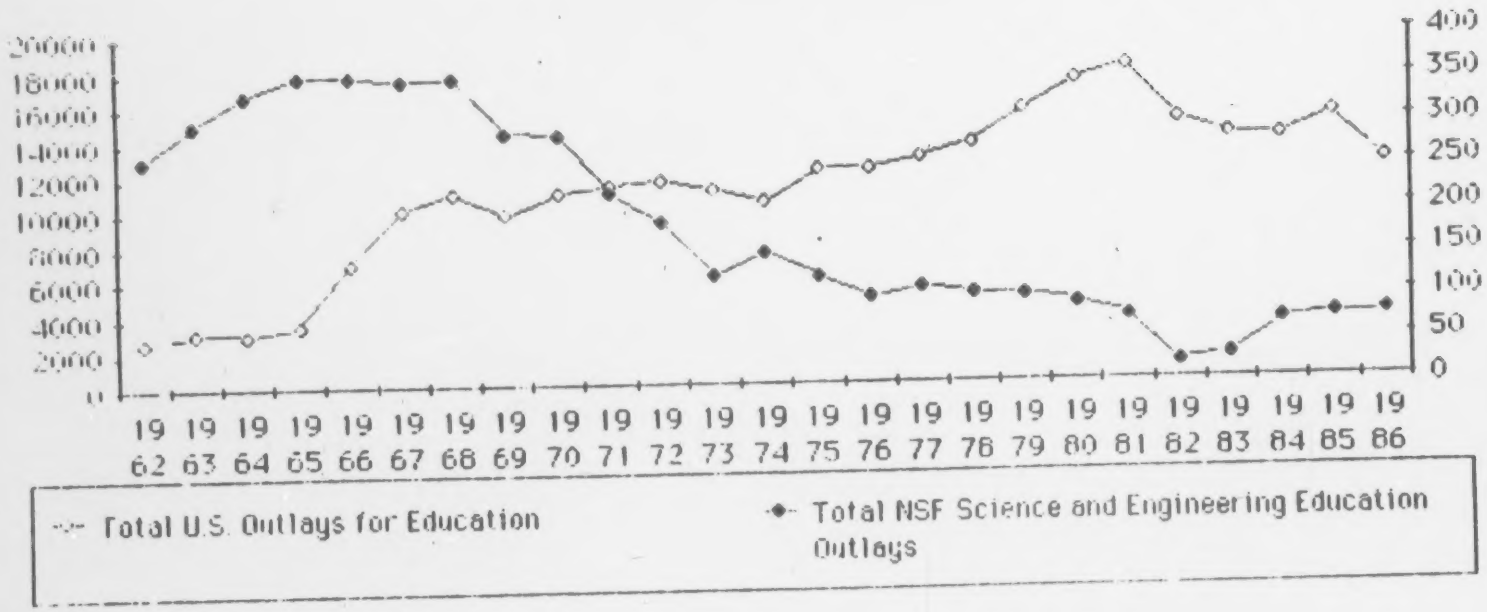
NATIONAL SCIENCE FOUNDATION
EDUCATION OBLIGATIONS BY LEVEL OF EDUCATION



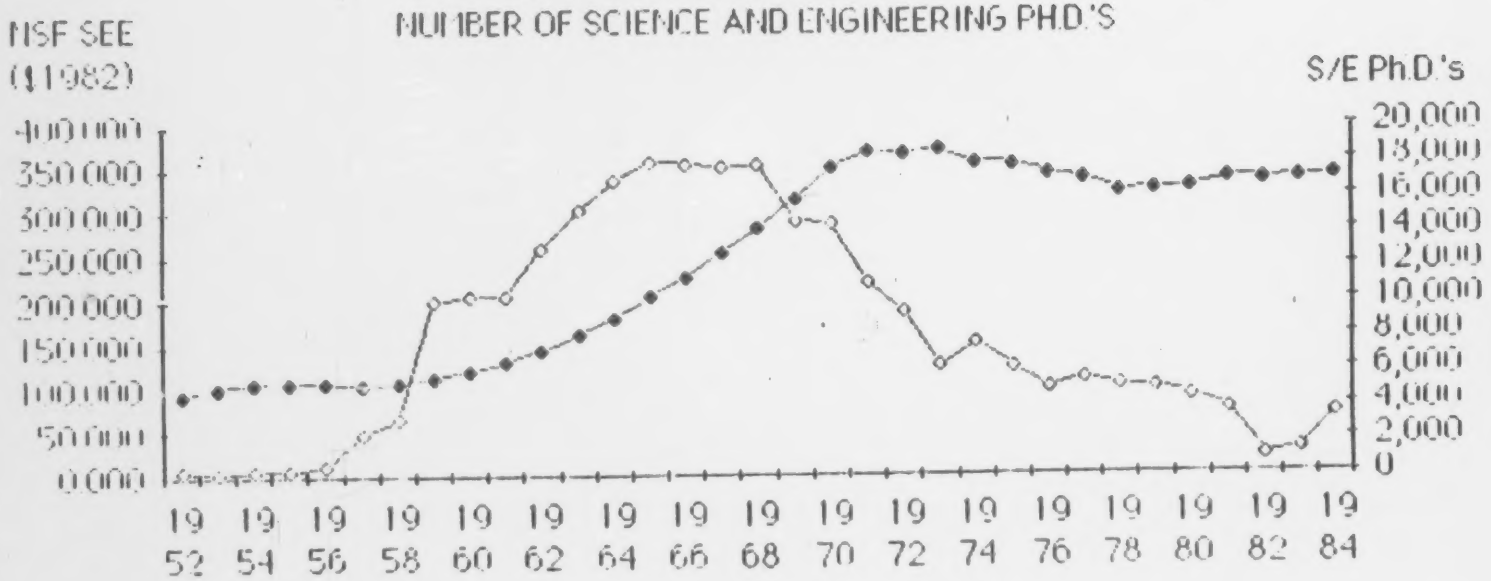
NSF OUTLAYS FOR PRECOLLEGE SUPPORT
AND NUMBER OF BA'S IN S/E 1950 TO 1984



COMPARISON OF NSF OUTLAYS FOR SCIENCE
AND ENGINEERING EDUCATION WITH
U.S. OUTLAYS FOR EDUCATION 1962-1986
(In Millions of 1982 Dollars)



NSF SEE OUTLAYS FOR SCIENCE AND
ENGINEERING EDUCATION AND
NUMBER OF SCIENCE AND ENGINEERING PH.D.'S



THE G.I. BILL

EXPENDITURES IN CURRENT AND CONSTANT 1982 DOLLARS

1945-1985

NUMBER OF STUDENTS IN HIGHER EDUCATION WITH GI BILL BENEFITS

1949-1985

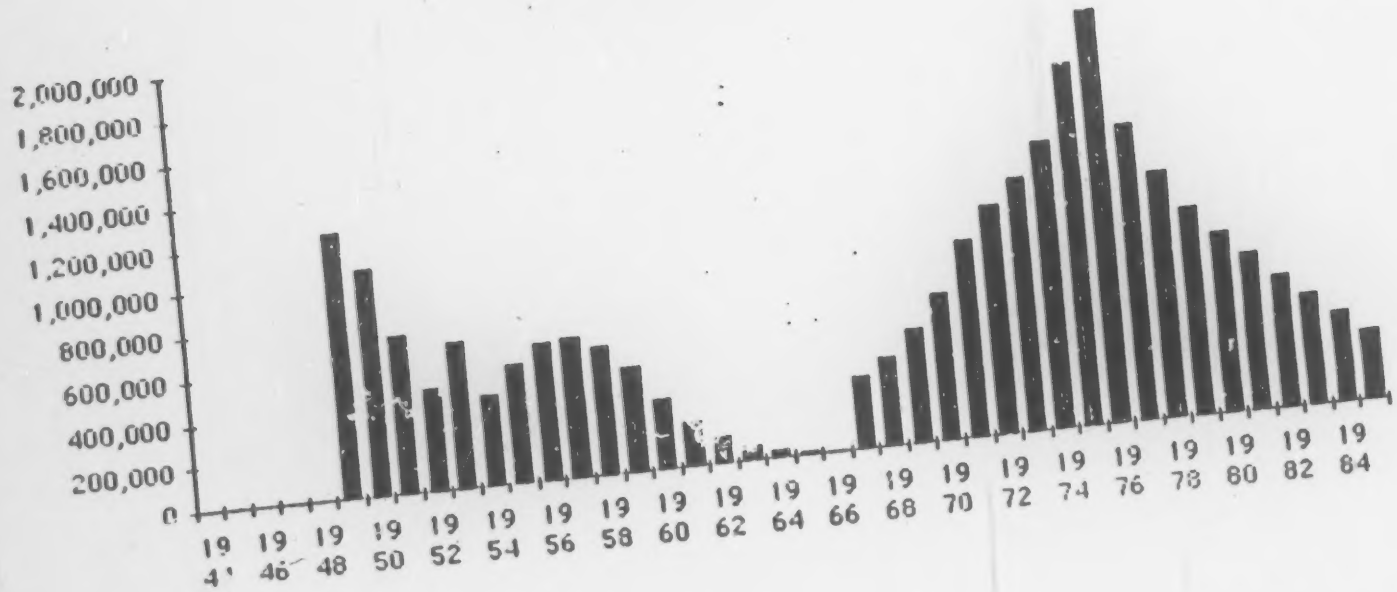
COST PER COLLEGE LEVEL STUDENT IN CURRENT AND 1982 CONSTANT DOLLARS

1949-1985

	A	H	I	J	K
1	ONSOLIDATED D				
2					
3					
4		College Level GI Benefits	No of GI College Trainees	ost/College Trainee, GI Bill	
5	1944	N.A.	NA	#VALUE!	
6	1945	N.A.	NA	#VALUE!	
7	1946	N.A.	NA	#VALUE!	
8	1947	N.A.	NA	#VALUE!	
9	1948	N.A.	NA	#VALUE!	
10	1949	4,680.1	1,232,368		$3,798
11	1950	4,155.3	1,055,622		$3,936
12	1951	2,634.6	731,672		$3,601
13	1952	1,434.5	478,492		$2,998
14	1953	960.6	678,967		$1,415
15	1954	957.3	423,700		$2,259
16	1955	1,263.3	547,612		$2,307
17	1956	1,537.8	637,113		$2,414
18	1957	1,563.4	644,644		$2,425
19	1958	1,418.9	590,267		$2,404
20	1959	1,144.1	493,028		$2,321
21	1960	754.4	331,648		$2,275
22	1961	466.3	209,973		$2,221
23	1962	269.3	122,686		$2,195
24	1963	138.3	68,655		$2,014
25	1964	76.4	36,109		$2,115
26	1965	25.9	16,307		$1,586
27	1966	0.0		#DIV/0!	
28	1967	601.4	338,785		$1,775
29	1968	888.3	413,714		$2,147
30	1969	1,094.7	528,515		$2,052
31	1970	1,583.6	677,240		$2,338
32	1971	2,651.6	917,389		$2,890
33	1972	2,822.6	1,064,513		$2,652
34	1973	N.A.	1,181,350	#VALUE!	
35	1974	N.A.	1,337,098	#VALUE!	
36	1975	N.A.	1,695,575	#VALUE!	
37	1976	N.A.	1,925,436	#VALUE!	
38	1977	N.A.	1,381,103	#VALUE!	
39	1978	N.A.	1,144,900	#VALUE!	
40	1979	N.A.	968,433	#VALUE!	
41	1980	N.A.	842,585	#VALUE!	
42	1981	N.A.	736,374	#VALUE!	
43	1982	1,158.1	620,503		$1,866
44	1983	1,084.3	517,692		$2,094
45	1984	841.2	421,458		$1,996
46	1985	663.6	326,177		$2,035
47	1986	N.A.	NA		N.A.

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	EXPENDITURES UNDER THE SERVICEMEN'S READJUSTMENT ACT OF 1944												
2													
3		Cost of Direct		Cost of Direct		Coll Level	Coll Level	Coll Level					
4		Ed Benefits	Cost: 1982$	Ed Benefits	Cost: 1982$	No. of People	Direct Benefit	Cost/Person				GNP Deflator	82 Conv Fact
5	1944	564	4,341	664,148	4,340,837							15.3	6.53594771
6	1945	17,642	108,546	17,041,716	108,543,962							15.7	6.36942675
7	1946	395,648	2,039,424	395,648,224	2,039,423,835							19.4	5.15463918
8	1947	2,339,882	10,587,703	2,339,892,437	10,587,703,885							22.1	4.52489688
9	1948	2,832,195	12,000,828	2,832,195,421	12,000,828,055							23.6	4.23728814
10	1949	3,039,061	12,932,177	3,039,061,490	12,932,176,587	1232368	1099832	892.45				23.5	4.25531915
11	1950	2,858,020	12,000,085	2,858,020,239	12,000,084,682	1055622	993127	940.80				23.9	4.18410042
12	1951	2,120,216	8,447,075	2,120,215,751	8,447,074,705	781672	661277	905.79				25.1	3.98406375
13	1952	1,428,305	5,581,530	1,428,305,412	5,581,599,851	478492	865787	764.46				25.5	3.92156863
14	1953	725,371	2,801,433	729,371,175	2,801,488,108	678967	248801	866.44				25.9	3.86100386
15	1954	585,414	2,225,908	585,413,775	2,225,907,890	423700	251761	594.20				26.3	3.80228137
16	1955	705,284	2,592,955	705,283,637	2,592,954,621	547612	343628	627.49				27.2	3.67647059
17	1956	806,856	2,871,372	806,855,534	2,871,872,078	637113	432135	679.27				28.1	3.55871886
18	1957	724,510	2,489,726	724,510,281	2,489,726,052	644644	454952	705.74				29.1	3.43642612
19	1958	724,510	2,439,429	724,510,281	2,439,429,556	590267	421422	718.95				29.7	3.36700337
20	1959	596,335	1,961,630	596,335,460	1,961,629,803	490020	347804	705.44				30.4	3.28947368
21	1960	400,771	1,296,995	400,771,476	1,296,995,068	331648	288107	702.87				30.9	3.23624595
22	1961	246,101	788,785	246,101,025	788,785,387	209973	145500	692.95				31.2	3.20512821
23	1962	152,893	479,289	152,893,144	479,289,953	122686	85300	700.16				31.9	3.13479624
24	1963	97,452	300,779	97,452,243	300,779,534	68655	44800	652.54				32.4	3.08641975
25	1964	70,489	214,252	70,488,807	214,251,698	36109	25180	695.95				32.9	3.03951368
26	1965	51,911	158,382	51,910,564	158,381,550	16307	8740	535.97				33.8	2.95857988
27	1966	40,539	138,683	40,538,976	138,682,789			*DK/DI				35	2.85714286
28	1967	305,214	850,179	305,214,112	850,178,595	339785	215900	637.28				35.9	2.78551532
29	1968	489,441	1,298,251	489,440,630	1,298,251,008	413714	334900	809.50				37.7	2.65251989
30	1969	698,123	1,741,514	698,122,502	1,741,513,924	528515	481700	816.82				39.8	2.51256281
31	1970	1,032,651	2,458,216	1,032,450,775	2,458,216,181	677240	665100	982.07				42	2.38095238
32	1971	1,651,073	3,718,635	1,651,073,011	3,718,682,906	917389	1177800	1283.32				44.4	2.25225225
33	1972	1,954,055	4,202,270	1,954,055,335	4,202,269,588	1064313	1812500	1232.96				46.5	2.15058768
34	1973	2,685,050	5,424,343	2,685,049,720	5,424,342,869	1181350		0.00				49.5	2.02020202
35	1974	3,189,038	5,905,626	3,189,038,168	5,905,626,287	1837098		0.00				54	1.85185185
36	1975	4,401,118	7,421,785	4,401,118,449	7,421,784,906	1693575		0.00				59.3	1.68634064
37	1976	5,300,006	8,399,376	5,300,006,365	8,399,376,170	1925436		0.00				63.1	1.58478605
38	1977	3,870,101	5,750,522	3,870,101,493	5,750,522,278	1381103		0.00				67.3	1.48588841
39	1978	3,343,971	4,631,539	3,343,971,163	4,631,539,035	1144900		0.00				72.2	1.38504155
40	1979	2,750,621	3,499,517	2,750,620,707	3,499,517,439	968433		0.00				78.6	1.27226463
41	1980	2,349,632	2,741,695	2,349,632,342	2,741,694,601	842585		0.00				85.7	1.16686114
42	1981	2,291,101	2,487,342	2,291,101,329	2,487,341,989	734374		0.00				94	1.06382979
43	1982	1,771,399	1,771,399	1,771,398,684	1,771,398,684	620503	1158085	1966.36				100	1
44	1983	1,683,239	1,621,618	1,683,239,028	1,621,617,561	517692	1125478	2174.02				103.8	0.96339114
45	1984	1,411,666	1,305,889	1,411,666,314	1,305,889,282	421458	909887	2157.72				108.1	0.92506938
46	1985	1,164,291	1,044,207	1,164,290,534	1,044,206,757	326177	789941	2269.53				111.9	0.89366099

NUMBER OF COLLEGE LEVEL TRAINEES
UNDER THE GI BILLS FROM FY 1949-1985



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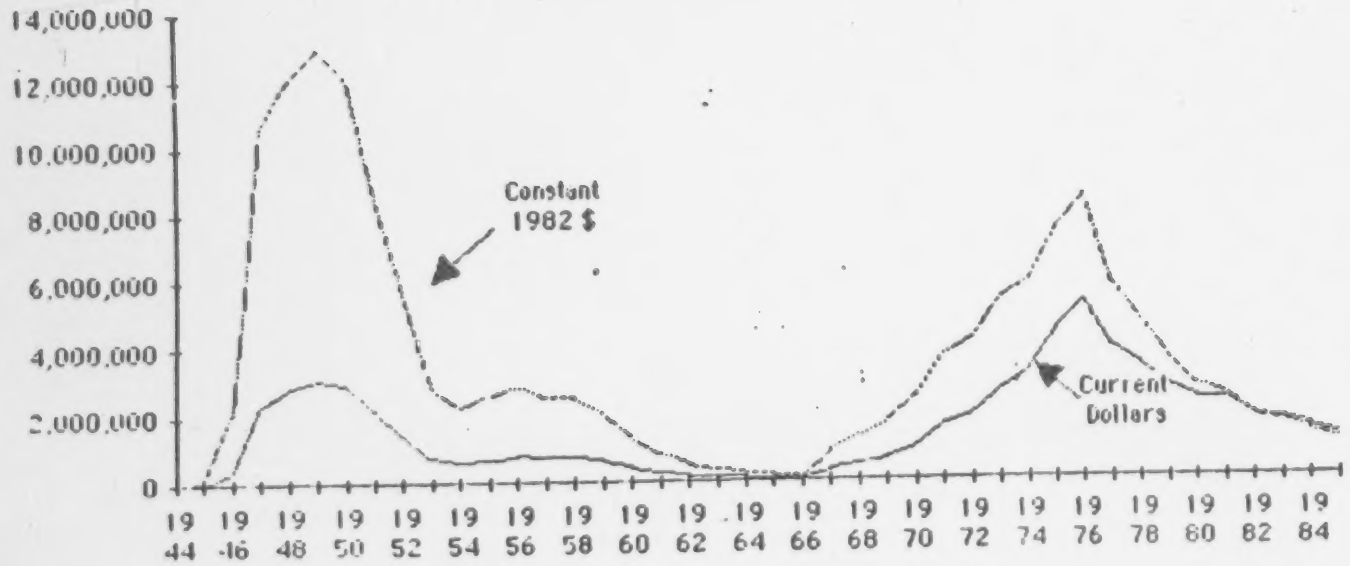
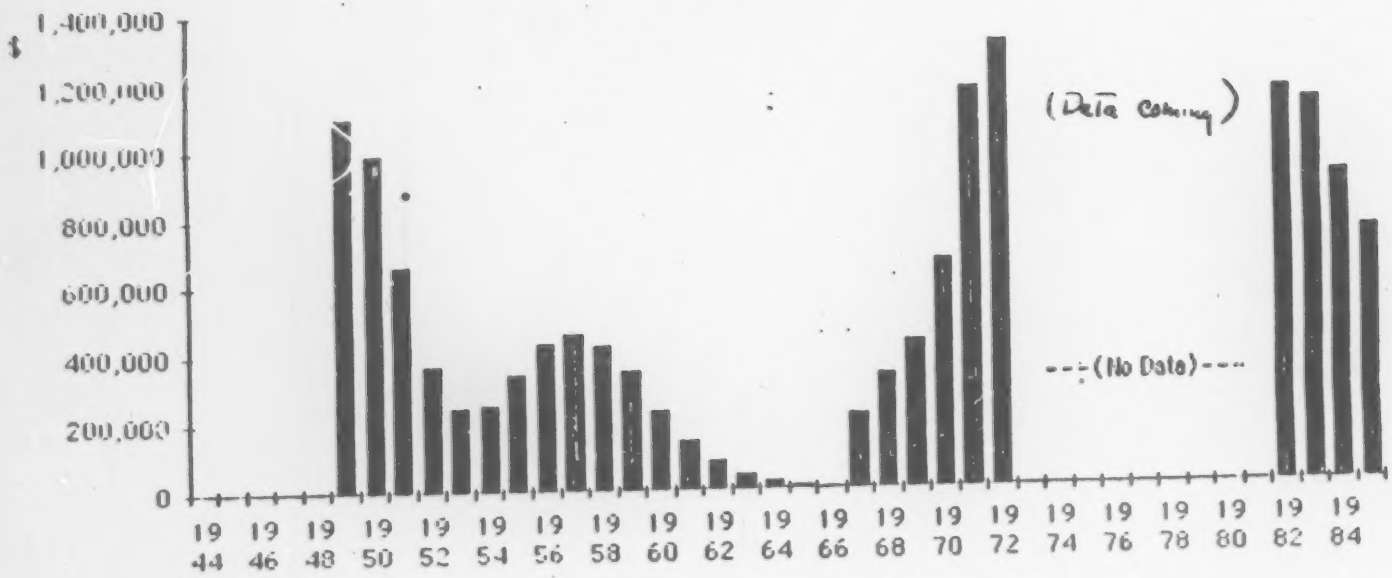
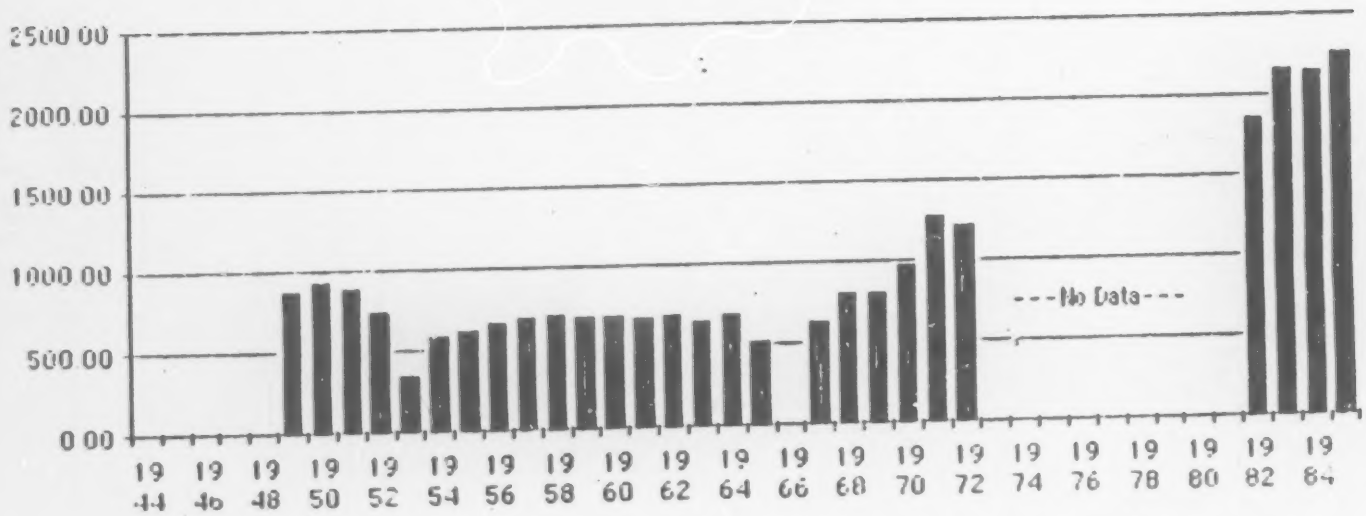
COST OF DIRECT BENEFITS FOR ALL
VETERANS EDUCATIONAL BENEFITS



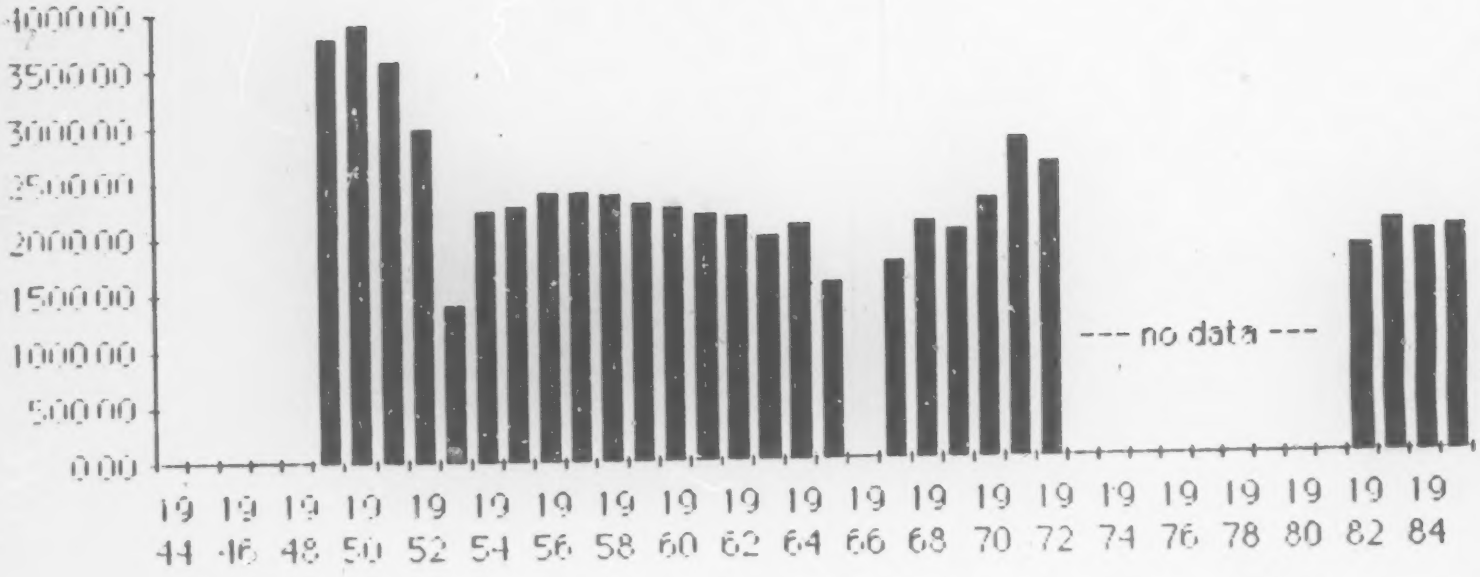
COLLEGE LEVEL DIRECT BENEFITS UNDER THE GI BILL
(Current Year Dollars)



COST PER PERSON FOR
COLLEGE LEVEL TRAINEES UNDER THE
GI BILLS: FY 1949-85



GI BILL COLLEGE LEVEL BENEFITS
COST PER PERSON IN 1982 DOLLARS



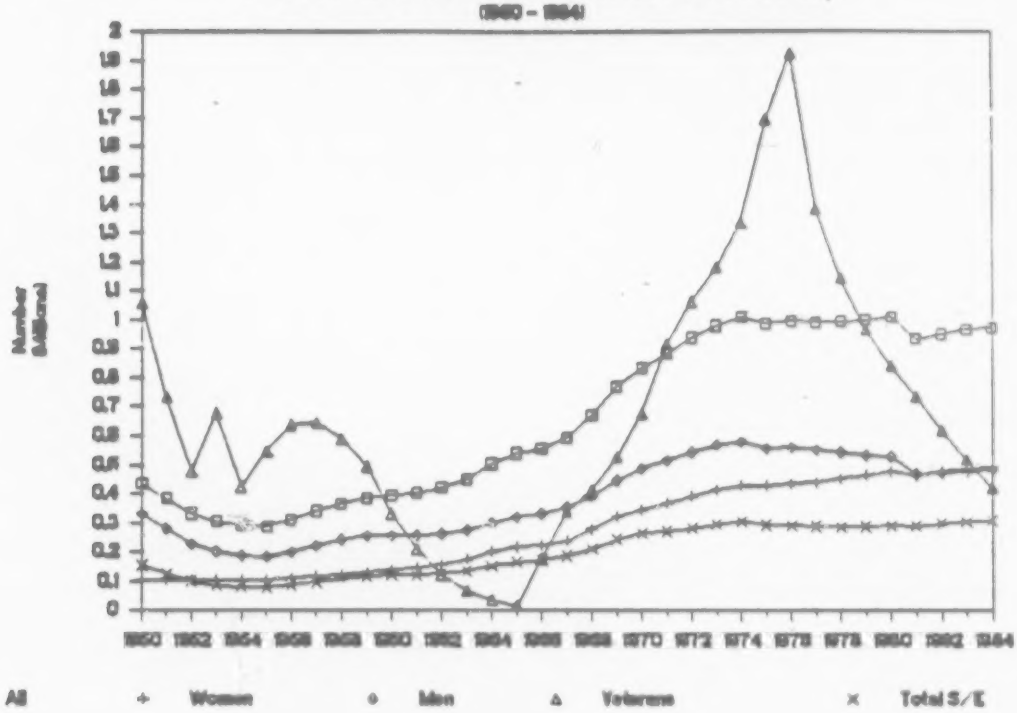
I09,17,25,33,41,49,57,65,73,81,89,97,A5,B3.

VETERAN ENROLLMENT AND BACHELORS DEGREES

Year	All Fields	Women	Men	Veterans	Total S/E	Women	Veta/2
1959				1232368			
1950	433734	103915	329819	1055622	154933	18215	527811
1951	384352	105009	279343	731672	125957	16135	365836
1952	331924	104895	227029	478492	100411	15309	239246
1953	304857	104037	200820	678967	86142	14068	339484
1954	292880	105380	187500	423700	82376	14270	211850
1955	287401	103799	183602	547612	80901	13778	273806
1956	311298	111727	199571	637113	87720	14474	318557
1957	340347	117609	222738	644644	98509	15291	322322
1958	365748	122800	242948	590267	108727	15921	295134
1959	385151	130283	254868	493028	116802	17327	246514
1960	394889	139385	255504	331648	120937	19362	165824
1961	401784	145884	255900	209973	121660	20595	104987
1962	420485	158470	262015	122686	127469	23485	61343
1963	450592	175842	274750	68655	135964	27099	34328
1964	502104	202291	299813	36109	153361	32473	18055
1965	538930	219260	319670	16307	164936	36213	8154
1966	555613	224491	331122	177546	173471	39482	88773
1967	594862	239562	355300	338785	187849	44002	169393
1968	671591	278761	392830	413714	212174	53463	206857
1969	769683	322750	446933	528515	244519	63196	264258
1970	833322	346373	486949	677240	264122	68878	338620
1971	884386	370166	514220	917389	271176	72996	458695
1972	937884	393232	544652	1064513	281228	77671	532257
1973	980707	412346	568361	1181350	295391	83839	590675
1974	1008654	428843	579811	1337098	305062	91793	668549
1975	987922	430268	557654	1695575	294920	93342	847788
1976	997504	435745	561759	1925436	292174	95597	962718
1977	993008	441219	551789	1381103	288543	97453	690552
1978	997165	453546	543619	1144900	288167	100060	572450
1979	1000562	466259	534303	968433	288625	102292	484217
1980	1010777	480039	530738	842585	291983	105974	421293
1981	935140	465257	469883	736374	291204	106783	368187
1982	952998	479634	473364	620503	298468	111473	310252
1983	969504	490370	479134	517692	305866	114022	258846
1984	974309	491990	482319	421458	308510	115358	210729
1985				326177			

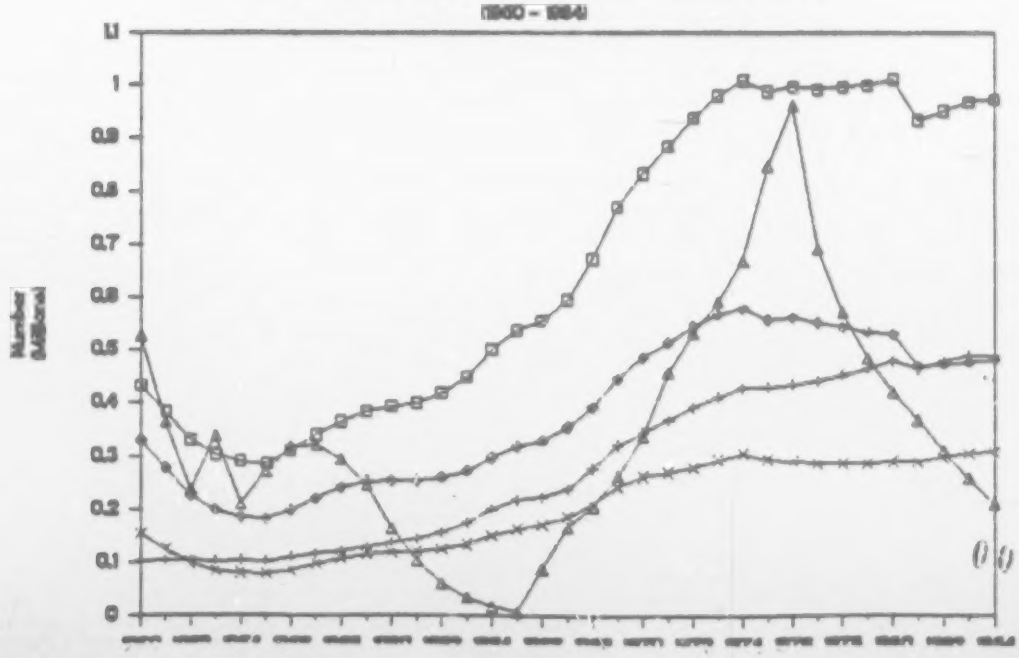
VETS ENROLLED & BACH DEGREES

(1960 - 1984)



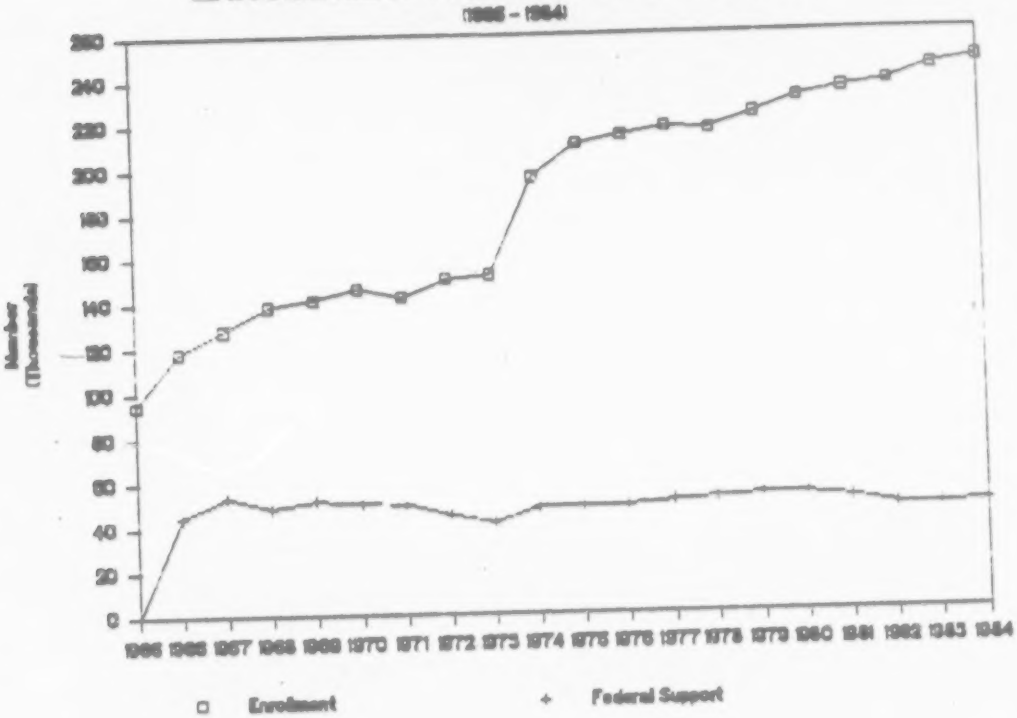
VETS ENROLLED & BACH DEGREES

(1960 - 1984)



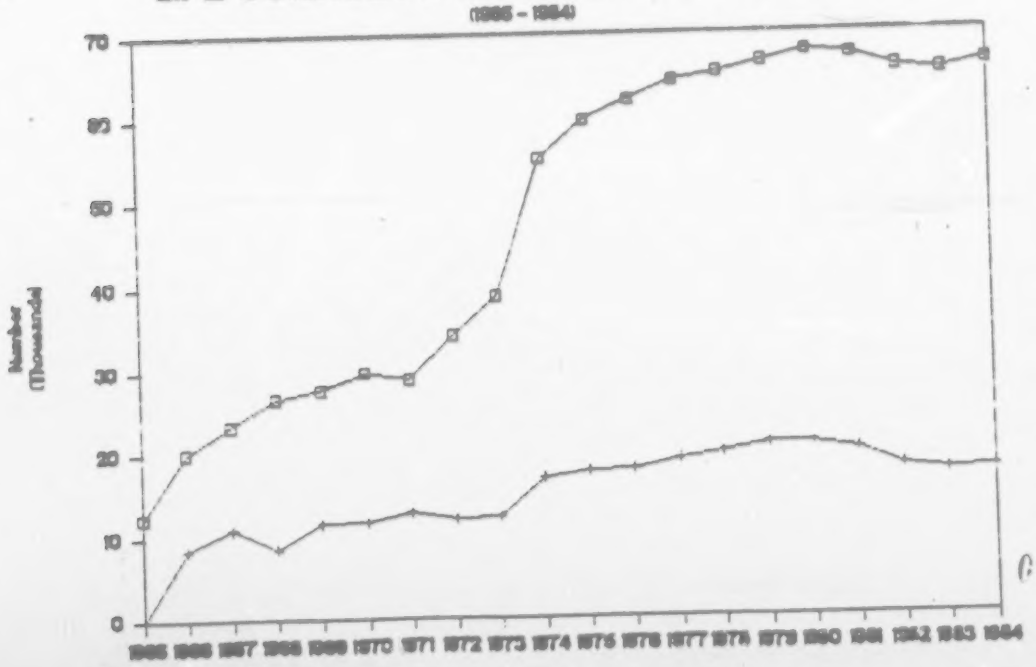
ENROLLMENT AND FEDERAL SUPPORT

(1966 - 1984)



LIFE SCIENCES ENROLLMENT AND FED SUP

(1966 - 1984)



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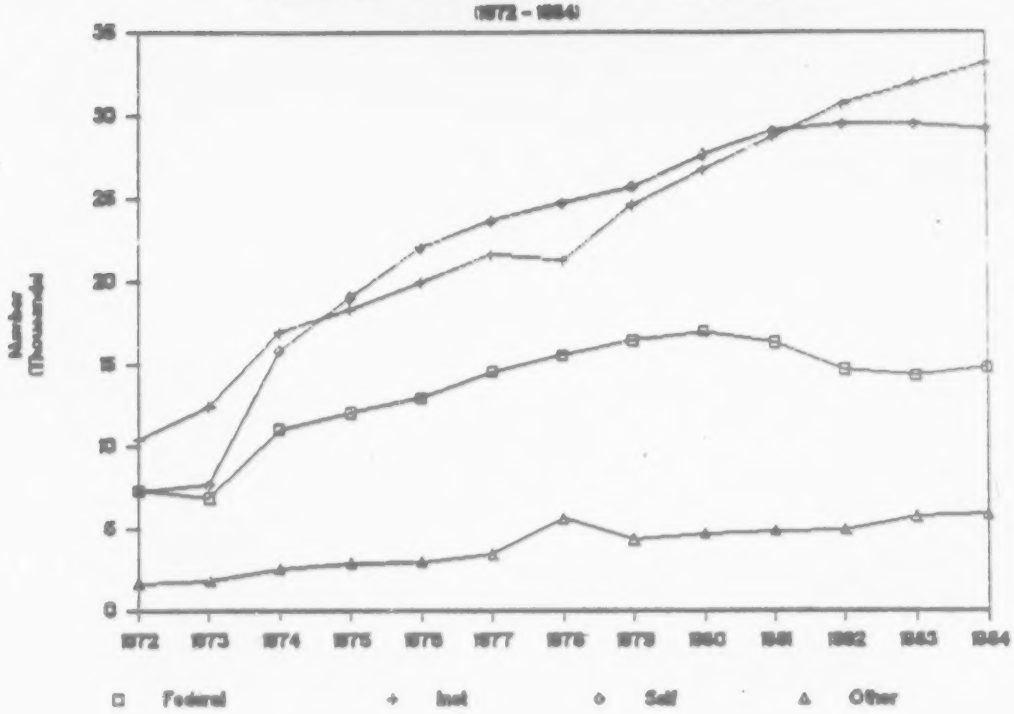
SOURCE OF SUPPORT - WOMEN

(1972 - 1984)



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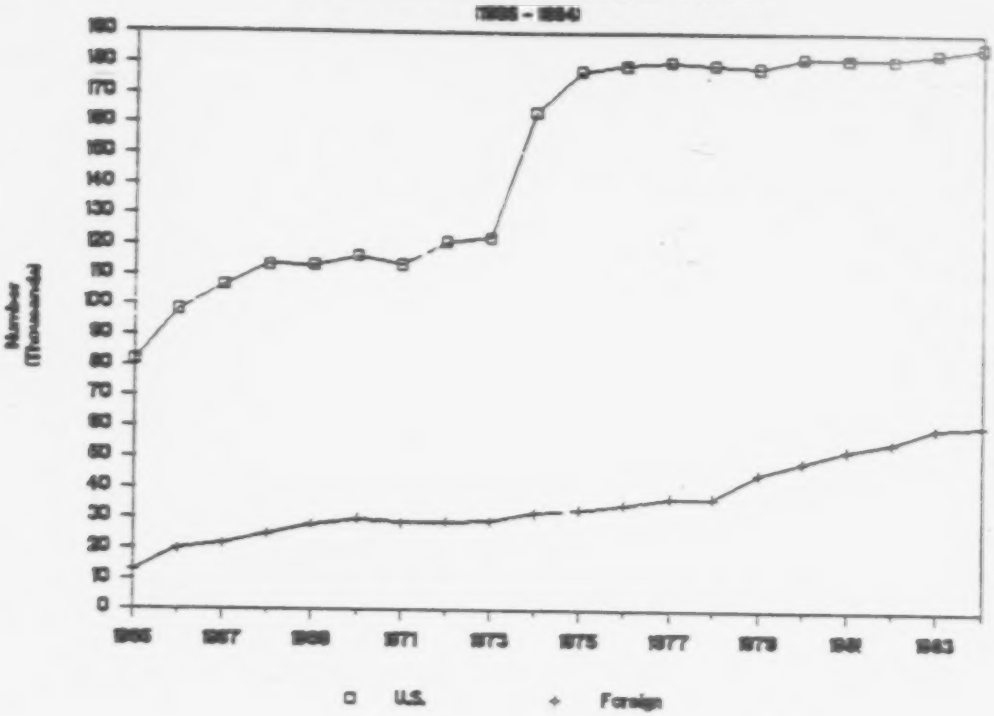
ENROLLMENT BY CITIZENSHIP



DEGREES AND SCIENCE/ENGINEERING DEGREES BY LEVEL AND YEAR

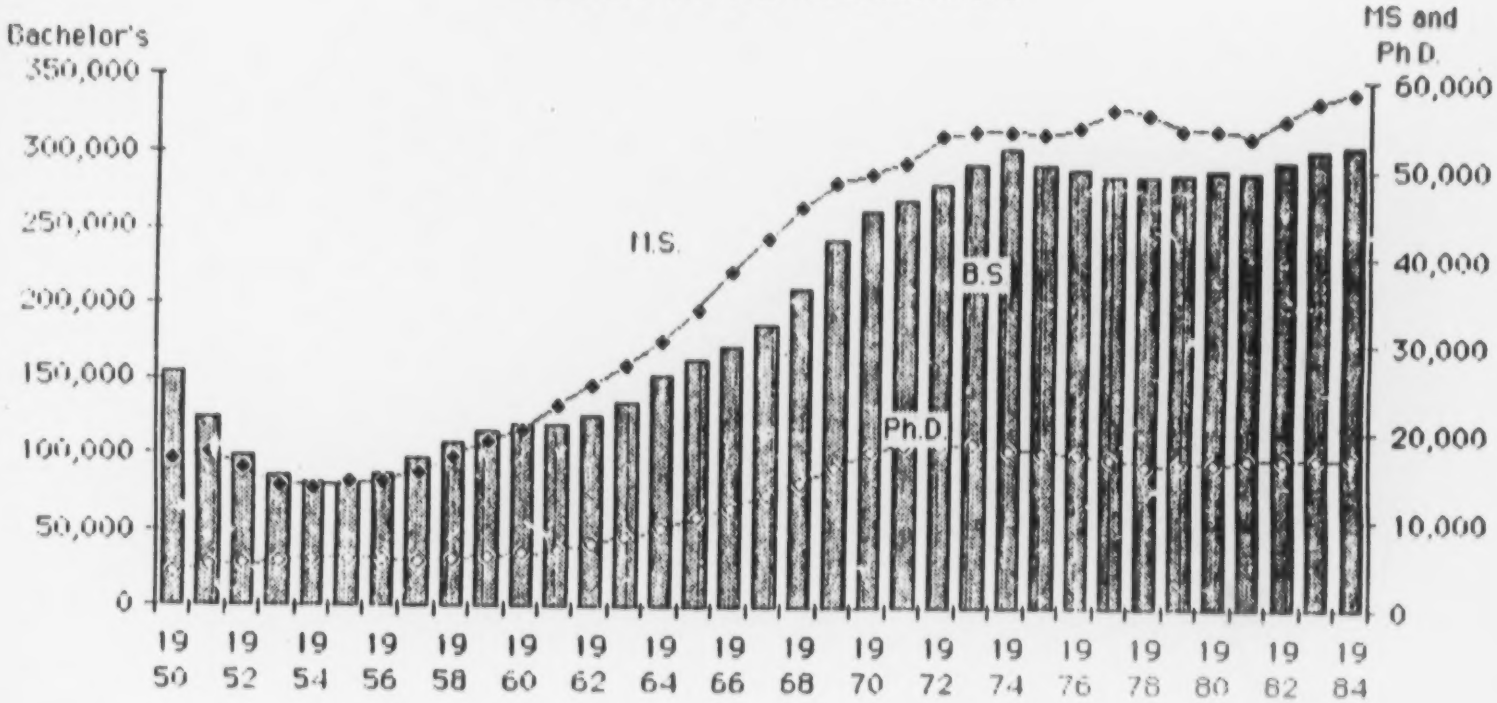
1950-1984

DEGREES IN ALL FIELDS AND IN SCIENCE ENGINEERING BY LEVEL 1950-1980

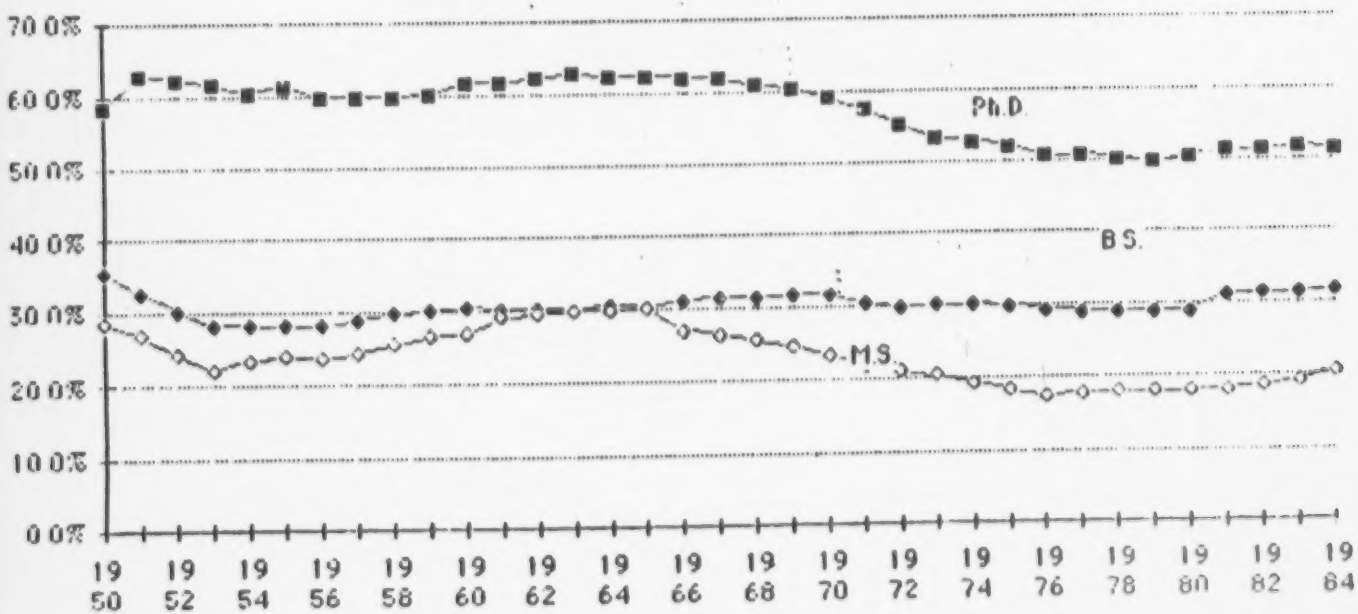
	Bachelor's			Master's			Doctor's		
	Total	Sci /Eng	Percent	Total	Sci /Eng	Percent	Total	Sci /Eng	Percent
1950	433,734	154,933	35.7%	58,219	16,596	28.5%	6,633	3,890	58.6%
1951	384,352	125,927	32.8%	65,132	17,539	26.9%	7,338	4,618	62.9%
1952	331,924	100,411	30.3%	63,471	15,544	24.5%	7,683	4,783	62.3%
1953	304,857	86,142	28.3%	61,023	13,548	22.2%	8,309	5,114	61.5%
1954	292,880	82,376	28.1%	56,823	13,399	23.6%	8,996	5,433	60.4%
1955	287,401	80,901	28.1%	58,204	13,989	24.0%	8,840	5,436	61.5%
1956	311,298	87,720	28.2%	59,294	14,061	23.7%	8,903	5,327	59.8%
1957	340,347	98,509	28.9%	61,955	15,205	24.5%	8,756	5,233	59.8%
1958	365,748	108,727	29.7%	65,614	16,840	25.7%	8,942	5,353	59.9%
1959	385,151	116,802	30.3%	69,584	18,682	26.8%	9,360	5,635	60.2%
1960	394,889	120,937	30.6%	74,497	20,012	26.9%	9,829	6,056	61.6%
1961	401,784	121,660	30.3%	78,269	22,786	29.1%	10,575	6,531	61.8%
1962	420,485	127,469	30.3%	84,889	25,146	29.6%	11,622	7,249	62.4%
1963	450,592	135,964	30.2%	91,418	27,367	29.9%	12,822	8,055	62.8%
1964	502,104	153,361	30.5%	101,222	30,271	29.9%	14,490	9,025	62.3%
1965	538,930	164,936	30.6%	112,195	33,835	30.2%	16,467	10,252	62.3%
1966	555,613	173,471	31.2%	140,772	38,083	27.1%	18,239	11,298	61.9%
1967	594,862	187,849	31.6%	157,892	41,800	26.5%	20,621	12,759	61.9%
1968	671,591	212,174	31.6%	177,150	45,425	25.6%	23,091	14,128	61.2%
1969	769,683	244,519	31.8%	194,414	48,425	24.9%	26,189	15,839	60.5%
1970	833,322	264,122	31.7%	209,387	49,318	23.6%	29,872	17,639	59.0%
1971	884,386	271,176	30.7%	231,486	50,624	21.9%	32,113	18,466	57.5%
1972	937,884	281,228	30.0%	252,774	53,567	21.2%	33,369	18,412	55.2%
1973	980,707	295,391	30.1%	264,525	54,234	20.5%	34,790	18,598	53.5%
1974	1,008,654	305,062	30.2%	278,259	54,175	19.5%	33,829	17,865	52.8%
1975	987,922	294,920	29.9%	293,651	53,852	18.3%	34,086	17,784	52.2%
1976	997,504	292,174	29.3%	313,001	54,747	17.5%	34,076	17,288	50.7%
1977	993,008	288,543	29.1%	318,241	56,731	17.8%	33,244	16,937	50.9%
1978	997,165	288,167	28.9%	312,816	56,237	18.0%	32,156	16,196	50.4%
1979	1,000,562	288,625	28.8%	302,075	54,456	18.0%	32,756	16,363	50.0%
1980	1,010,777	291,983	28.9%	299,095	54,391	18.2%	32,632	16,483	50.5%
1981	935,140	291,204	31.1%	295,739	53,710	18.2%	32,958	16,935	51.4%
1982	952,998	298,468	31.3%	295,546	55,788	18.9%	32,647	16,862	51.6%
1983	969,504	305,864	31.5%	298,921	57,830	19.3%	32,775	17,016	51.9%
1984	974,309	308,510	31.7%	284,263	58,875	20.7%	33,209	17,117	51.5%

Sources: National Science Foundation and National Center for Education Statistics, Department of Education

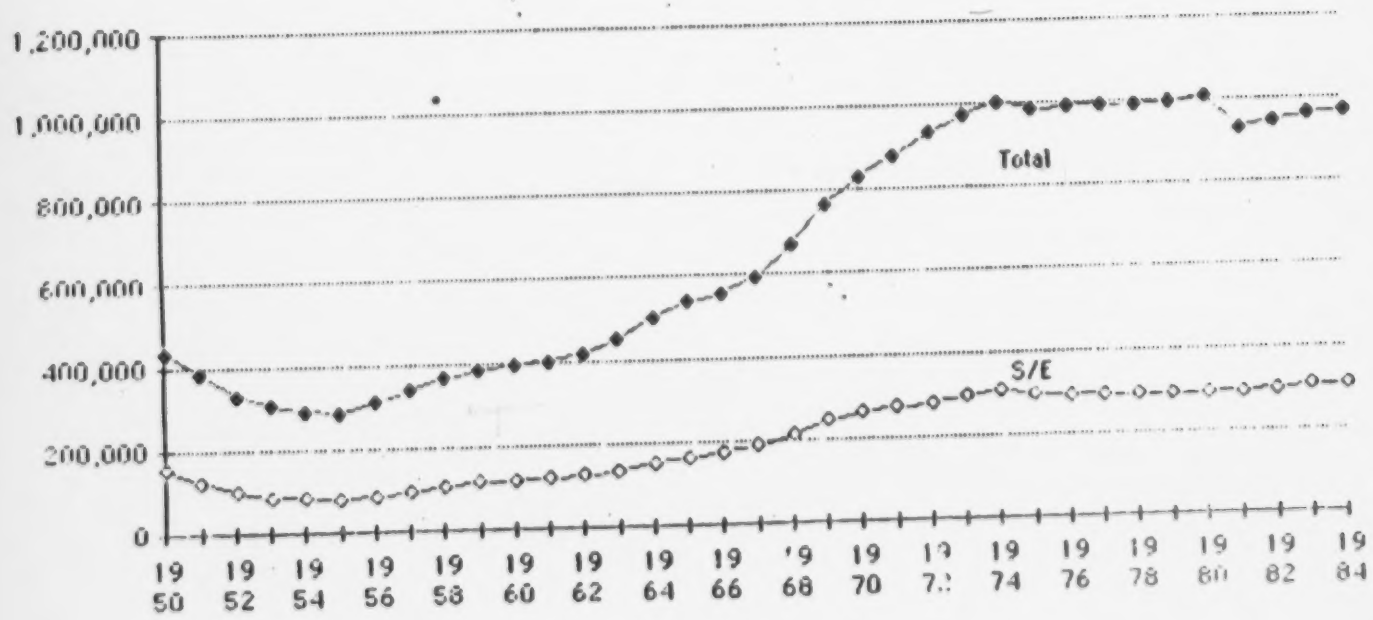
BACHELOR'S DEGREES IN S/E COMPARED WITH
MASTER'S AND PH.D DEGREES IN S/E



Science and Engineering Degrees As A Percent Of All Degrees Awarded, By Category: 1950-1984



Bachelors Degrees and S/E Bachelor's Degrees 1950-1984



BACHELOR'S DEGREES BY FIELD OF SCIENCE AND ENGINEERING, BY SEX

1950-1984

Percentages are as of my formula

WOMEN BACHELORS GRADUATES (1950 - 1984)

				Science/engineering Fields																					
Year	All Fields	Women	% W	Total S/E	% S/E	Women	% W	Physical Sciences	Women	% W	Engi-nrng	Women	% W	Math CS	Women	% W	Life sci.	Women	% W	Social sci.	Women	% W	All other Fields	Women	% W
1950	433734	103915	24	54933	36	18215	12	17725	1737	1	52246	175	0	6392	1446	1	39101	4928	3	39469	9929	6	278801	85700	20
1951	384352	105009	27	125957	33	16135	13	14296	1420	1	41473	87	0	5753	1442	1	32271	4253	3	32164	8933	7	258395	88874	23
1952	331924	104895	32	100411	30	15309	15	12145	1332	1	30549	60	0	4721	1332	1	25231	3805	4	27765	8780	9	231513	89586	27
1953	304857	104037	34	86142	28	14068	16	10414	1277	1	24189	37	0	4396	1274	1	21835	3475	4	25308	8005	9	218715	89969	30
1954	292880	105380	36	82376	28	14270	17	9880	1273	2	22329	65	0	4090	1368	2	21584	3505	4	24493	8059	10	210504	91110	31
1955	287401	103799	36	80901	28	13778	17	10516	1382	2	22589	62	0	4034	1310	2	19927	3250	4	23835	7774	10	206500	90021	31
1956	311298	111727	36	87720	28	14474	17	11672	1501	2	26312	76	0	4660	1523	2	19890	3382	4	25186	7992	9	223578	97253	31
1957	340347	117609	35	98509	29	15291	16	12934	1613	2	31211	81	0	5546	1720	2	21903	3576	4	26915	8301	8	241838	102318	30
1958	365748	122800	34	108727	30	15921	15	14352	1669	2	35332	109	0	6924	1971	2	23069	3670	3	29050	8502	8	257021	106879	29
1959	385151	130283	34	116802	30	17327	15	15460	1766	2	38134	121	0	9019	2515	2	23861	4127	4	30328	8798	8	268349	112956	29
1960	394889	139385	35	120937	31	19362	16	16057	2016	2	37808	145	0	11437	3125	3	24141	4491	4	31494	9585	8	273952	120023	30
1961	401784	145884	36	121660	30	20595	17	15500	2008	2	35866	134	0	13127	3644	3	23900	4822	4	33267	9987	8	280124	125289	31
1962	420485	158470	38	127469	30	23485	18	15894	2146	2	34735	125	0	14610	4255	3	25200	5470	4	37030	11489	9	293016	134985	32
1963	450592	175842	39	135964	30	27099	20	16276	2238	2	33458	130	0	16121	4958	4	27801	6174	5	42308	13599	10	314628	148743	33
1964	502104	202291	40	153361	31	32473	21	17527	2450	2	35226	159	0	18677	5995	4	31611	7213	5	50320	16656	11	348743	169818	36
1965	538930	219260	41	164935	31	36213	22	17916	2532	2	36795	139	0	19668	6453	4	34842	8277	5	55715	18812	11	373994	183047	36
1966	555613	224491	40	173471	31	39482	23	17186	2333	1	35815	146	0	20182	6702	4	36864	8464	5	63424	21837	13	382142	185009	33
1967	594862	239562	40	187849	32	44002	23	17794	2402	1	36188	184	0	21530	7334	4	39408	8948	5	72929	25134	13	407013	195560	33
1968	671591	278761	42	212174	32	53463	25	19442	2674	1	37614	211	0	24084	8841	4	43260	10091	5	87774	31646	15	459417	225298	34
1969	769683	322750	42	244519	32	63196	26	21591	2952	1	41553	313	0	28263	10348	4	48713	11308	5	104399	38275	16	525164	259554	34
1970	833322	346373	42	264122	32	68878	26	21551	2969	1	44772	338	0	29109	10516	4	52129	11875	4	116561	43180	16	569200	277495	33
1971	884386	370166	42	271176	31	72996	27	21549	3014	1	45387	365	0	27306	9818	4	51461	11803	4	125473	47996	18	613210	297170	34
1972	937884	393232	42	281228	30	77671	28	20887	3148	1	46003	501	0	27250	9784	3	53484	12694	5	133604	51544	18	656656	315561	34
1973	980707	412346	42	295391	30	83839	28	20809	3121	1	46989	580	0	27528	9985	3	59486	14570	5	140579	55583	19	685316	328507	33
1974	1008654	428843	43	305062	30	91793	30	21287	3536	1	43530	706	0	26570	9719	3	68226	17836	6	145449	59996	20	703592	337050	33
1975	987922	430268	44	294920	30	93342	32	20896	3838	1	40065	860	0	23385	8656	3	72710	20811	7	137864	59177	20	693062	336926	34
1976	997504	435745	44	292174	29	95597	33	21559	4139	1	39114	1443	0	21749	7678	3	77301	23789	8	132451	58548	20	705330	340148	34
1977	. 008	441219	44	288543	29	97453	34	22618	4551	2	41581	2086	1	20729	7488	3	78472	25609	9	125143	57719	20	704465	343766	35
1978	997165	453546	45	288167	29	100060	35	23175	4987	2	47411	3497	1	19925	7110	2	77138	26954	9	120518	57512	20	708998	353486	35
1979	1000562	466259	47	288625	29	102292	35	23363	5287	2	53720	4919	2	20670	7421	3	75085	27548	10	115787	57117	20	711937	363967	36
1980	1010777	480039	47	291983	29	105974	36	23661	5651	2	59240	6014	2	22686	8247	3	71617	27596	9	114779	58466	20	718794	374065	37
1981	935149	465257	50	291204	31	106783	37	23952	5888	2	63287	7024	2	26199	9655	3	66832	26786	9	110934	57430	20	643936	358474	38
1982	952998	479634	50	298468	31	111473	37	24052	6186	2	67021	8231	3	31866	12055	4	63884	26282	9	111645	58719	20	654530	368161	39
1983	969504	490370	51	305466	32	114022	37	23234	6350	2	72248	9601	3	36963	14362	5	64119	25937	8	109302	57772	19	663638	376348	39
1984	974309	491990	50	308510	32	115358	37	23525	6487	2	75732	10668	3	45383	17771	6	55863	23766	8	108007	56666	18	665799	376632	39

I09,17,25,33,41,49,57,65,73,81,89,97,A5,B3.

BACHELORS DEGREES IN THE PHYSICAL SCIENCES (1950 - 1984)

				Physical Sciences Fields															
Year	Total	Women	% W	Physics	% P/S	Women	% P	Chemistry	% P/S	Women	% C	Geology	% P/S	Women	% G	Other	% P/S	Women	% O
1950	17725	1727	10	3414	19	127	4	10619	60	1485	14	3043	17	109	4	649	4	16	2
1951	14296	1420	10	2788	20	117	4	8258	58	1222	15	2717	19	74	3	533	4	.7	1
1952	12145	1332	11	2247	19	106	5	6819	56	1102	16	2102	17	76	4	977	8	48	5
1953	10414	1277	12	2005	19	84	4	5943	57	1073	18	1719	17	68	4	747	7	52	7
1954	9880	1273	13	1952	20	75	4	5791	59	1064	18	1632	17	79	5	505	5	55	11
1955	10516	1382	13	1996	19	76	4	5920	56	1139	19	1795	17	92	5	805	8	75	9
1956	11672	1501	13	2335	20	102	4	6178	53	1182	19	2163	19	78	4	996	9	139	14
1957	12934	1613	12	2743	21	122	4	6591	51	1294	20	2570	20	89	3	1028	8	108	11
1958	14352	1669	12	3186	22	144	5	7010	49	1305	19	2827	20	104	4	1329	9	116	9
1959	15460	1766	11	3809	25	141	4	7308	47	1411	19	2878	19	91	3	1465	9	123	8
1960	16057	2016	13	4338	27	172	4	7603	47	1598	21	2465	15	75	3	1651	10	171	10
1961	15.00	2008	13	4322	28	230	5	7604	49	1508	20	1870	12	77	4	1704	11	193	11
1962	15894	2146	14	4812	30	188	4	8089	51	1715	21	1430	9	69	5	1563	10	174	11
1963	16276	2238	14	4785	29	237	5	8823	54	1768	20	1087	7	64	6	1581	10	169	11
1964	17527	2450	14	4956	28	241	5	9724	55	1914	20	1113	6	94	8	1734	10	201	12
	17916	2532	14	4954	28	246	5	10047	56	1936	19	1131	6	119	11	1784	10	231	13
	17186	2333	14	4609	27	224	5	9735	57	1801	19	1329	8	127	10	1513	9	181	12
1967	17794	2402	13	4733	27	267	6	9872	55	1771	18	1458	8	163	11	1731	10	201	12
1968	19442	2674	14	5045	26	296	6	10847	56	1965	18	1718	9	178	10	1832	9	235	13
1969	21591	2952	14	5535	26	322	6	11807	55	2156	18	2014	9	205	10	2235	10	259	12
1970	21551	2969	14	5333	25	329	6	11617	54	2116	18	2286	11	246	11	2315	11	278	12
1971	21549	3014	14	5076	24	343	7	11183	52	2095	19	2415	11	265	11	2875	13	311	11
1972	20887	3148	15	4645	22	323	7	10721	51	2120	20	2573	12	326	13	2948	14	379	13
1973	20809	3121	15	4268	21	313	7	10226	49	1967	19	2929	14	389	13	3386	16	452	13
1974	21287	3536	17	3962	19	337	9	10525	49	2112	20	3256	15	523	16	3544	17	554	16
1975	20896	3838	18	3716	18	362	10	10649	51	2385	22	3324	16	575	17	3207	15	516	16
1976	21559	4139	19	3544	16	388	11	11107	52	2497	22	3362	16	606	18	3546	16	648	18
1977	22818	4551	20	3420	15	358	10	11322	50	2602	23	3879	17	836	22	3997	18	755	19
1978	23175	4987	22	3330	14	369	11	11474	50	2881	25	4344	19	958	22	4027	17	779	19
1979	23363	5287	23	3338	14	399	12	11643	50	3113	27	4503	19	1058	23	3879	17	717	18
1980	23661	5651	24	3397	14	434	13	11446	48	3277	29	4600	19	1131	25	4213	18	809	19
1981	23952	5888	25	3441	14	432	13	11347	47	3394	30	5202	22	1303	25	3962	17	759	19
1982	24052	6186	26	3472	14	460	13	11062	46	3491	32	5538	23	1415	26	3980	17	820	21
1983	23234	6350	27	3793	16	482	13	10796	46	3630	34	6102	26	1568	26	2543	11	670	26
1984	23525	6487	28	3907	17	557	14	10704	46	3731	35	6549	28	1615	25	2365	10	584	25

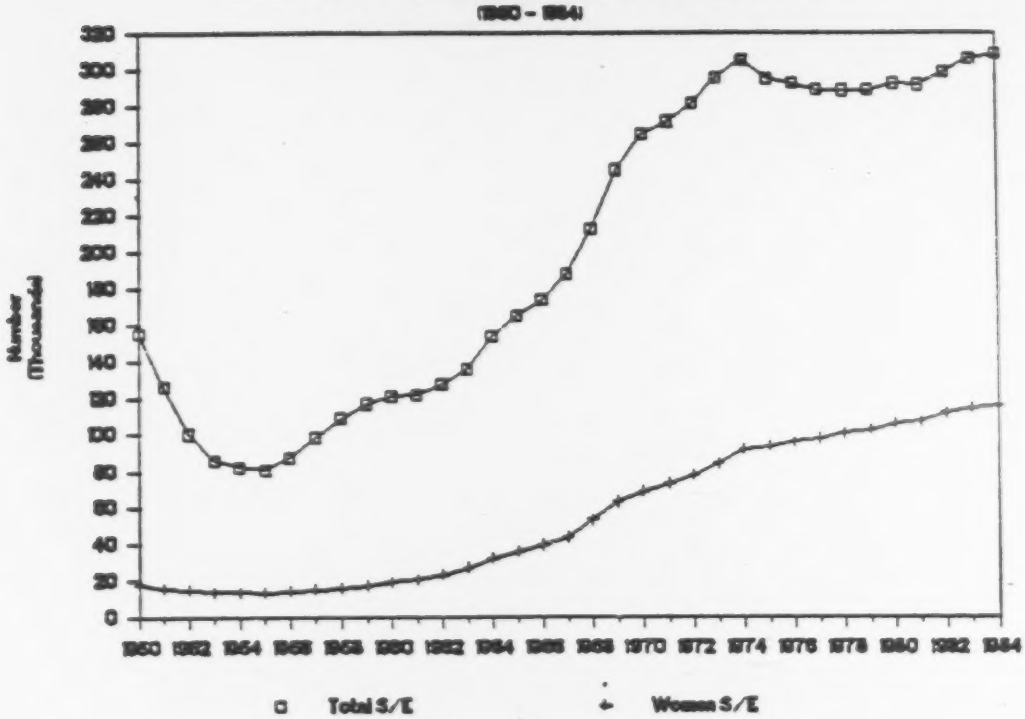
BACHELORS DEGREES IN ENGINEERING (1950 - 1964)

Engineering Fields

Year	Total	Women	% Wom	Aero/ Astro	% Eng	Women	% A/A	Chem	% Eng	Women	% Chem	Civil	% Eng	Women	% Civ	Elec	% Eng	Women	% E/E	Indus	% Eng	Women	% Ind	Mech	% Eng	Women	% Mec	Other	% Eng	Women	% Oth
1950	52246	175	0	1712	3	16	1	4506	9	32	1	7781	15	20	0	13270	25	39	0		0			14441	28	27	0	10536	20	43	0
1951	41473	87	0	1481	4	9	1	3707	9	28	1	7050	17	7	0	9488	23	11	0		0			10798	26	15	0	8949	22	25	0
1952	30549	67	0	911	3	11	1	2857	9	6	0	5329	17	7	0	6453	21	7	0		0			7685	25	8	0	7316	24	19	0
1953	26189	31	0	738	3	4	1	2258	9	5	0	4396	18	7	0	4899	20	7	0		0			5964	25	6	0	5934	25	9	0
1954	22329	65	0	640	3	1	0	2042	9	9	0	3955	18	7	0	4578	21	13	0	1342	6	4	0	5419	24	9	0	4333	19	22	1
1955	22589	62	0	686	3	3	0	2027	9	13	1	3848	17	8	0	4860	22	13	0	1468	6	6	0	5876	26	9	0	3826	17	12	0
1956	26312	76	0	895	3	2	0	2446	9	22	1	4227	16	11	0	6228	24	11	0	1651	6	5	0	6728	26	11	0	4117	16	14	0
1957	31211	81	0	1109	4	5	0	2818	9	22	1	4683	15	9	0	8108	26	11	0	1926	6	7	0	7987	25	15	0	4460	15	12	0
1958	35332	109	0	1337	4	7	1	3008	9	22	1	5134	15	13	0	9567	27	19	0	2108	6	3	0	9068	26	19	0	5116	14	26	1
1959	38134	121	0	1551	4	6	0	3131	8	20	1	5394	14	19	0	10786	28	30	0	2297	6	6	0	9592	25	12	0	5383	14	28	1
1960	37808	145	0	1698	4	6	0	2946	8	31	1	5303	14	15	0	10631	28	32	0	2242	6	10	0	9597	25	20	0	5371	14	31	1
1961	35846	134	0	1444	5	5	0	2844	8	19	1	5385	15	25	0	10200	28	25	0	2044	6	7	0	8651	24	22	0	5816	16	31	1
1962	34735	125	0	1440	4	5	0	2677	8	20	1	5235	15	23	0	10263	30	34	0	1984	5	8	0	8473	24	13	0	4743	14	22	0
1963	33450	130	0	1292	4	4	0	2724	8	26	1	4854	15	18	0	10393	31	31	0	1861	6	10	1	7697	23	23	0	4637	14	18	0
1964	35226	159	0	1455	4	7	0	2998	9	28	1	5077	14	24	0	11261	32	33	0	2194	6	8	0	7697	22	17	0	4544	13	42	1
1965	36795	139	0	1717	5	8	0	3076	8	26	1	5200	14	13	0	11730	32	36	0	2236	6	6	0	8035	22	16	0	4881	13	36	1
1966	35815	146	0	1683	5	5	0	2848	8	23	1	5335	15	19	0	11007	31	29	0	2335	7	18	0	7811	22	19	0	4796	13	41	1
1967	36188	184	1	1914	5	16	1	2869	8	28	1	5147	14	23	0	10843	30	42	0	2366	7	9	0	7898	22	20	0	5139	14	48	1
1968	37616	211	1	2072	6	12	1	3211	9	30	1	5508	15	28	1	10725	29	43	0	2727	7	15	1	7950	21	32	0	5441	14	51	1
1969	41553	313	1	2625	6	19	1	3557	9	53	1	6001	14	43	1	11695	28	66	1	3000	7	16	1	8514	20	48	0	6102	15	76	1
1970	44772	338	1	2756	6	20	1	3720	8	57	2	6524	15	47	1	12288	27	68	1	3199	7	21	1	9310	21	39	0	6975	16	86	1
1971	45287	365	1	2443	5	17	1	3615	8	63	2	6413	15	54	1	12288	27	76	1	3210	7	20	1	8917	20	41	0	8301	18	94	1
1972	44803	501	1	2180	5	20	1	3663	8	76	2	6909	15	67	1	12181	26	82	1	3713	8	48	1	8574	19	48	1	8783	19	168	2
1973	46989	580	1	1738	4	18	1	3636	8	90	2	7502	16	78	1	12377	26	158	1	3508	7	21	1	8584	18	61	1	9646	21	144	1
1974	43538	706	2	1218	3	18	1	3454	8	117	3	8145	19	129	2	11419	26	117	1	2921	7	44	2	7737	18	63	1	8644	20	218	3
1975	40065	860	2	1174	3	24	2	3142	8	141	4	7798	19	158	2	10246	26	138	1	2583	6	39	2	6949	17	82	1	8181	20	274	3
1976	39116	1443	4	1009	3	29	3	3203	8	276	9	8059	21	252	3	9874	25	193	2	2241	6	87	4	6841	17	147	2	7887	20	459	6
1977	42581	2086	5	1078	3	28	3	3581	9	429	12	8376	20	433	5	10018	24	268	3	2244	5	149	7	7771	19	236	3	8493	20	543	6
1978	47611	3497	7	1186	3	41	5	4315	10	716	16	9265	20	698	7	11213	24	435	4	2712	6	323	12	6924	19	466	5	9496	20	806	8
1979	53720	4919	9	1386	3	44	5	5655	11	1006	18	9941	19	955	10	12440	23	659	5	2804	5	428	15	10171	19	603	6	11323	21	1202	11
1980	59240	6014	10	1424	2	82	6	6383	11	1215	19	10442	18	991	9	13902	23	902	6	3217	5	545	17	11863	20	842	7	12089	20	1397	12
1981	63287	7026	11	1809	3	129	7	6527	10	1252	19	10678	17	1121	10	14938	24	1094	7	3633	6	756	20	13329	21	1136	9	12173	19	1534	13
1982	67021	8231	12	2120	3	171	8	6740	10	1467	22	10524	16	1191	11	16455	25	1409	9	3992	6	943	24	13922	21	1220	9	13268	20	1838	14
1983	72248	9401	13	2127	3	172	8	7185	10	1616	22	9989	14	1321	13	18049	25	1774	10	3748	5	981	26	15475	22	1443	9	15475	21	2294	15
1984	75732	10668	14	2534	3	175	7	7475	10	1871	25	9693	13	1303	13	19943	26	2024	10	3937	5	1054	27	16629	22	1761	11	15521	20	2180	14

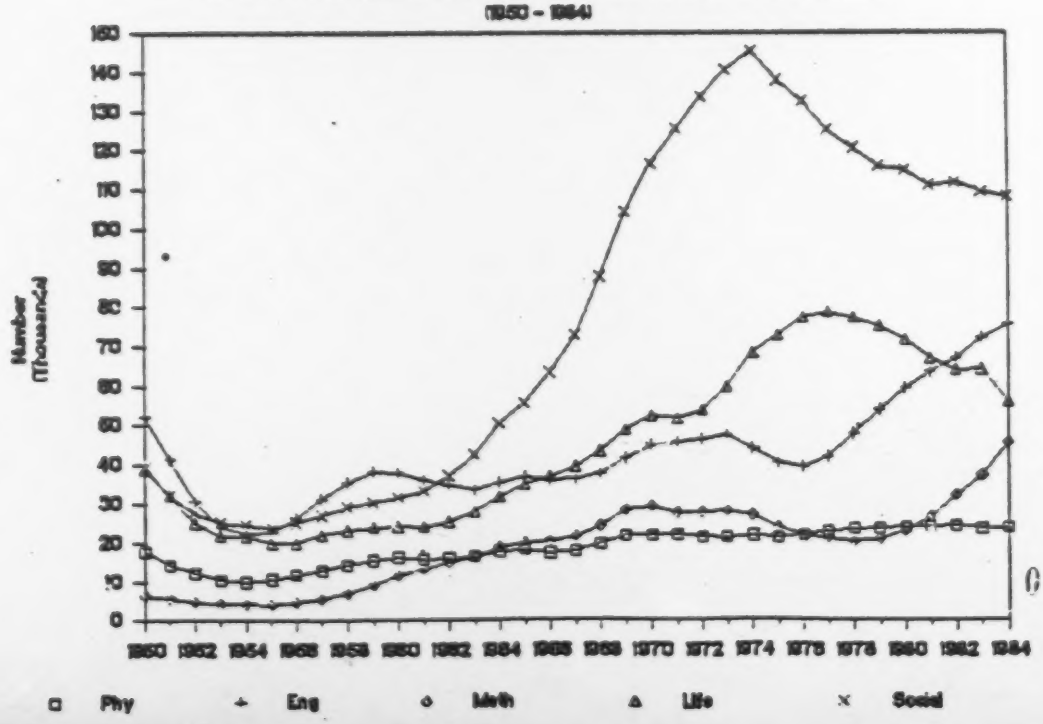
ALL AND WOMEN S/E BACHELORS

(1950 - 1984)



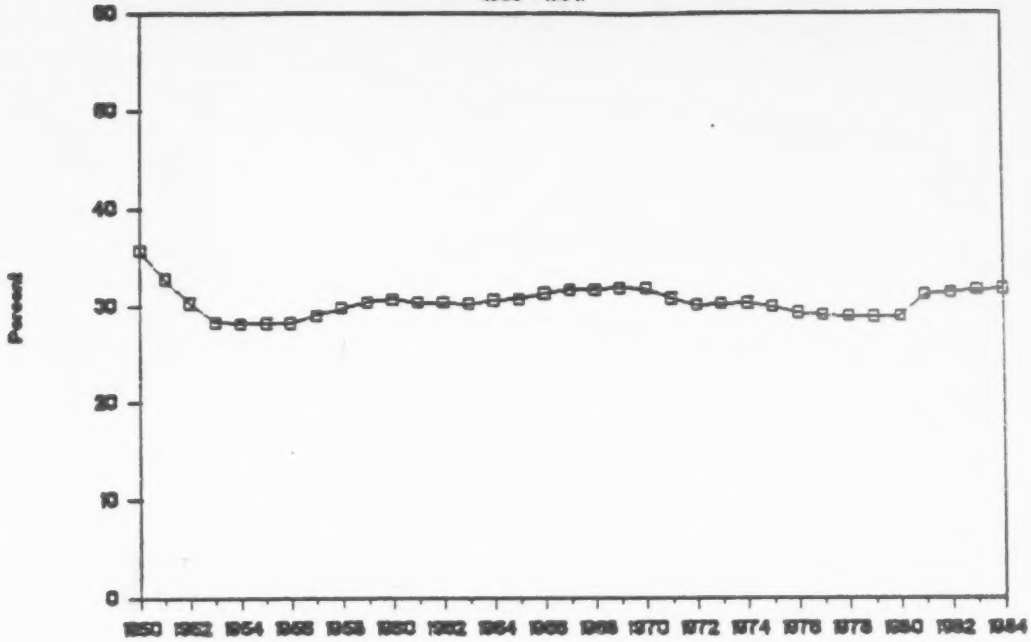
S&E BACHELOR'S GRADUATES BY FIELD

(1950 - 1984)



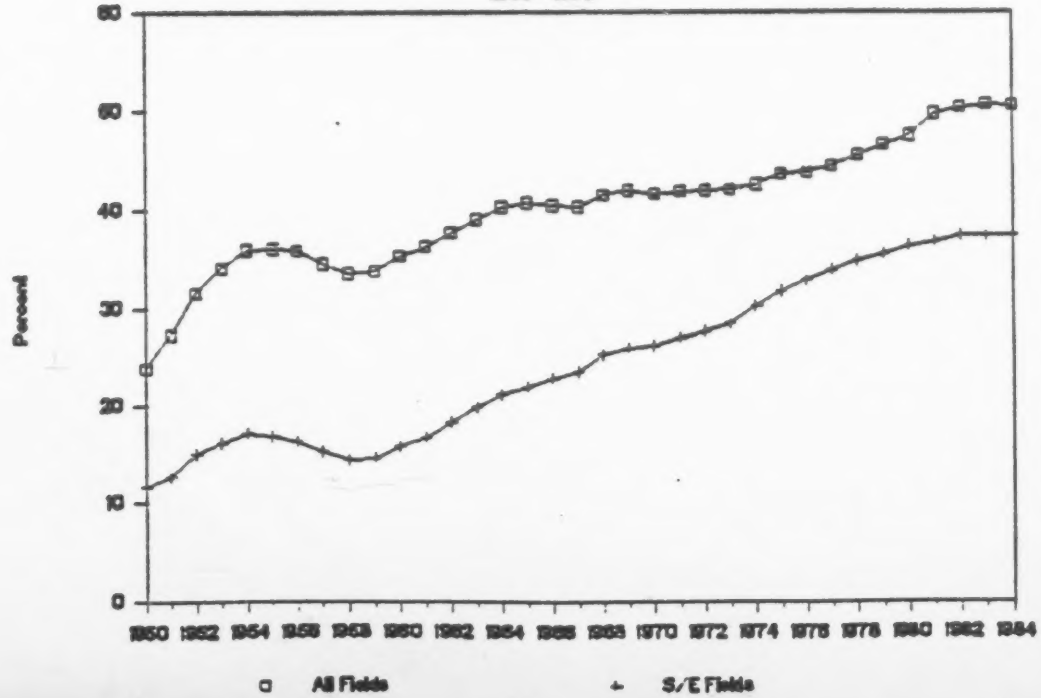
S&E AS % OF ALL BACHELORS DEGREES

(1950 - 1984)



PERCENT WOMEN, ALL & S/E BACHELORS

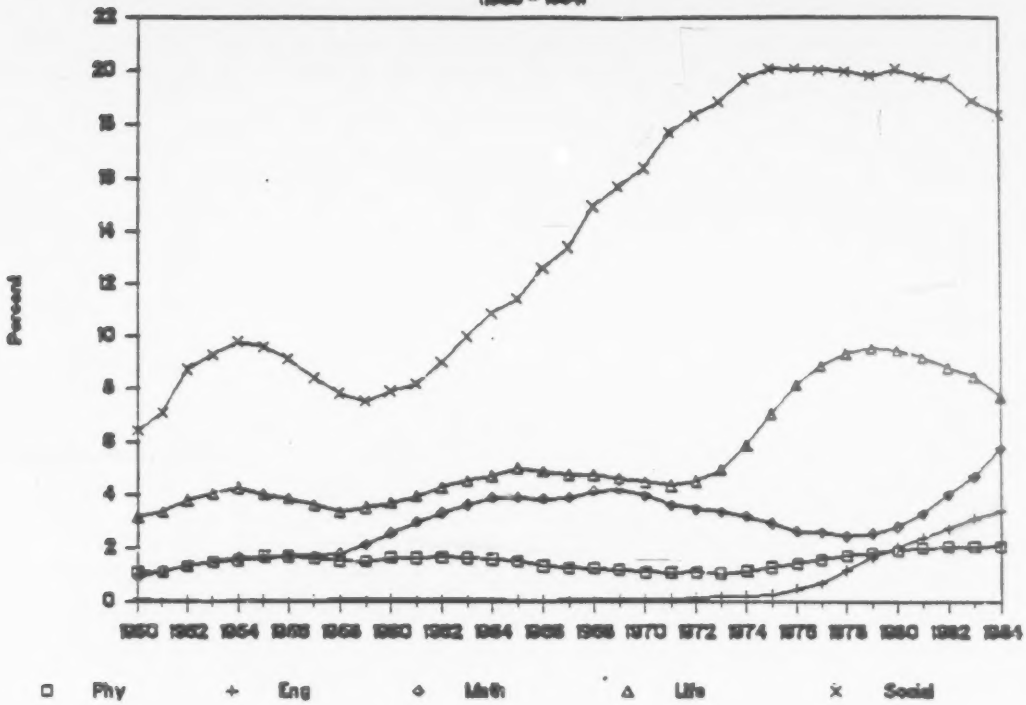
(1950 - 1984)



as % of all women Eng

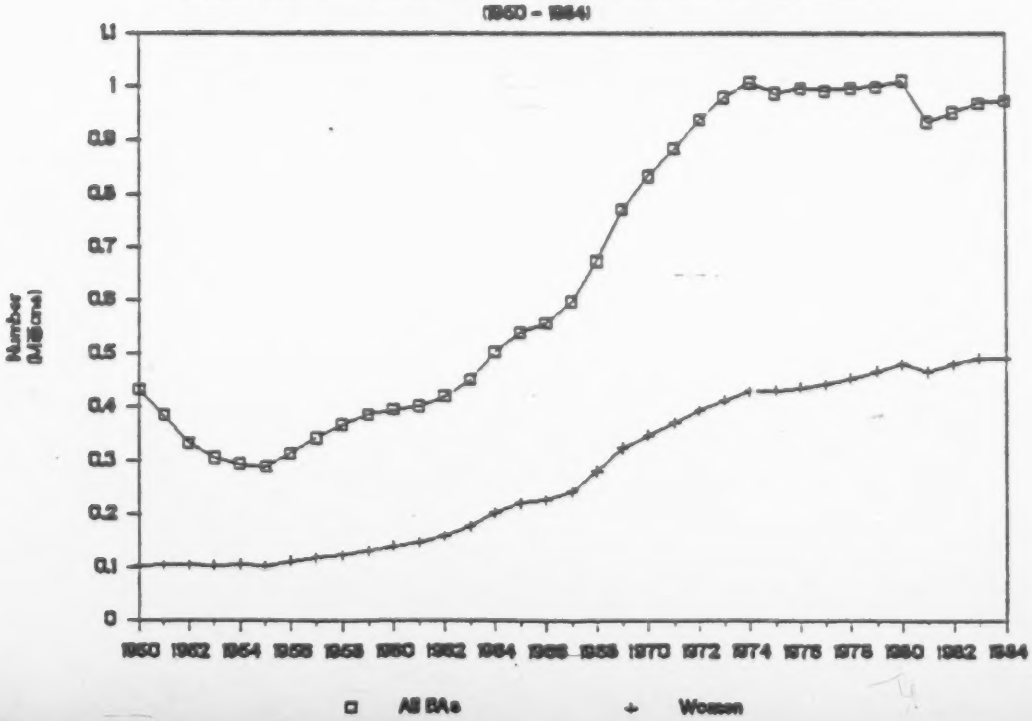
WOMEN ~~AS % OF~~ S&E GRADUATES BY FIELD

(1960 - 1984)



ALL AND WOMEN BACHELORS DEGREES

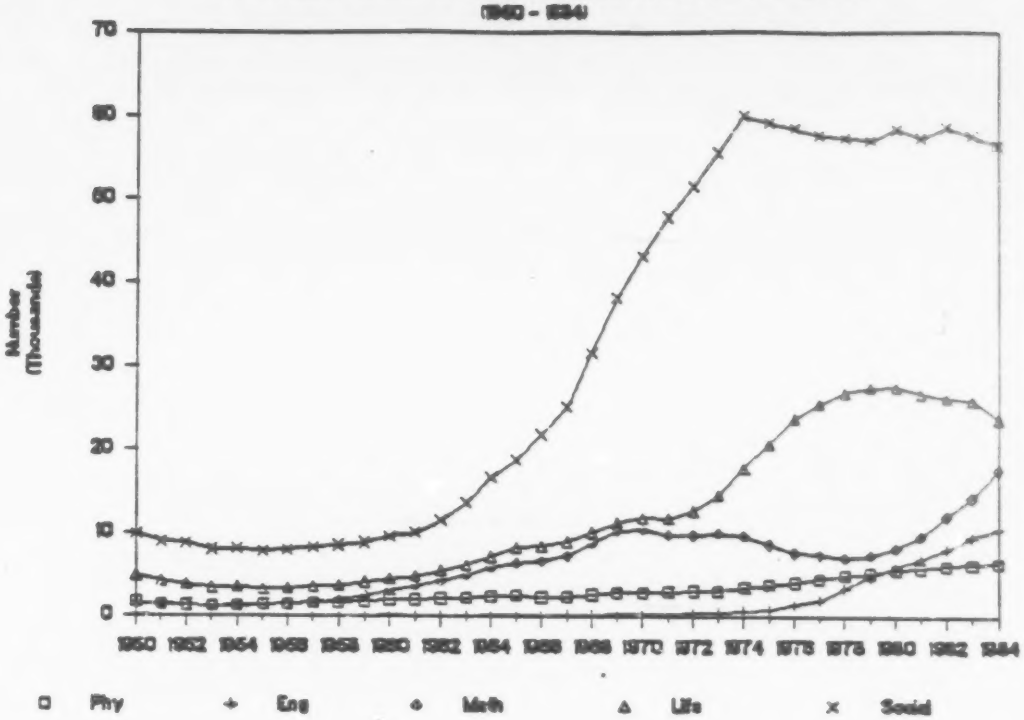
(1960 - 1984)



00010

WOMEN S&E BS GRADUATES BY FIELD

(1960 - 1984)



60 of 11

PhD DEGREES BY BROAD FIELD AND SEX

1960-1984

PH.D. DEGREES AWARDED TO U.S. CITIZENS BY BROAD FIELD, RACIAL/ETHNIC GROUP AND SEX

1975-1985

PhD DEGREES BY SCIENCE & ENGINEERING FIELD & SEX (1950 - 1984)

			Science/engineering fields																									
	All			Total	%			Physical			Engi-			Math			Life						Social			All other		
	Fields	Women	%W	S/E	S/E	Women	%W	Sciences	Women	%W	nrng	Women	%W	CS	Women	%W	sci.	Women	%W	Psych	Women	%W	Sci	Women	%W	Fields	Women	%W
1	6633	643	10	3890	59	244	6	1698	49	1.3	417	1	0.0	160	9	0.2	1033	95	2.4	283	42	1.1	499	48	1.2	2743	399	[illegible]
2	7338	674	9	4618	63	291	6	1681	64	1.4	520	1	0.0	184	9	0.2	1192	102	2.2	425	57	1.2	616	58	1.3	2720	383	[illegible]
3	7683	714	9	4783	62	294	6	1720	57	1.2	529	3	0.1	206	11	0.2	1187	94	2.0	540	73	1.5	601	56	1.2	2900	420	[illegible]
4	8309	792	10	5114	62	322	6	1714	62	1.2	518	1	0.0	241	14	0.3	1443	123	2.4	583	79	1.5	615	43	0.8	3195	470	[illegible]
5	8996	815	9	5433	60	310	6	1686	61	1.1	594	0	0.0	227	14	0.3	1628	111	2.0	619	66	1.2	679	58	1.1	3563	505	[illegible]
6	8840	826	9	5436	61	302	6	1713	52	1.0	599	0	0.0	250	11	0.2	1505	107	2.0	688	84	1.5	681	48	0.9	3404	524	[illegible]
7	8903	885	10	5327	60	349	7	1667	68	1.3	610	0	0.0	235	10	0.2	1404	123	2.3	634	86	1.6	777	62	1.2	3576	536	[illegible]
8	8756	939	11	5233	60	345	7	1674	71	1.4	596	1	0.0	249	13	0.2	1449	122	2.3	550	90	1.7	715	48	0.9	3523	596	[illegible]
9	8942	964	11	5353	60	378	7	1655	66	1.2	647	4	0.1	247	15	0.3	1465	144	2.7	572	84	1.6	767	65	1.2	3589	586	[illegible]
0	9360	989	11	5635	60	376	7	1812	69	1.2	714	1	0.0	282	15	0.3	1427	120	2.1	635	98	1.7	765	73	1.3	3725	613	[illegible]
1	9829	1028	10	6056	62	382	6	1838	62	1.0	786	3	0.0	303	18	0.3	1647	126	2.1	661	97	1.6	841	76	1.3	3773	646	[illegible]
2	10575	1112	11	6531	62	449	7	1991	70	1.1	943	6	0.1	344	17	0.3	1646	144	2.2	703	136	2.1	904	76	1.2	4044	663	[illegible]
3	11622	1245	11	7249	62	501	7	2122	87	1.2	1207	4	0.1	396	24	0.3	1804	161	2.2	781	149	2.1	939	76	1.0	4373	744	[illegible]
4	12822	1374	11	8055	63	573	7	2380	95	1.2	1378	11	0.1	490	36	0.4	1908	184	2.3	844	144	1.8	1055	103	1.3	4767	801	[illegible]
5	14490	1535	11	9025	62	632	7	2455	113	1.3	1693	7	0.1	596	29	0.3	2181	203	2.2	939	182	2.0	1161	98	1.1	5465	903	[illegible]
6	16467	1775	11	10252	62	709	7	2829	127	1.2	2124	10	0.1	688	40	0.6	2474	246	2.4	847	159	1.6	1290	107	1.0	6215	1066	[illegible]
7	18239	2118	12	11298	62	875	8	3045	131	1.2	2304	9	0.1	801	57	0.5	2696	314	2.8	1046	220	1.9	1406	144	1.3	6941	1243	[illegible]
8	20621	2457	12	12759	62	1013	8	3462	162	1.3	2614	11	0.1	870	60	0.5	2900	354	2.8	1231	232	1.8	1682	194	1.5	7862	1444	[illegible]
9	23091	2906	13	14128	61	1204	9	3593	188	1.3	2932	12	0.1	983	52	0.4	3445	452	3.2	1268	286	2.0	1907	214	1.5	8963	1702	[illegible]
0	26189	3436	13	15839	60	1375	9	3859	206	1.3	3377	12	0.1	1161	70	0.4	3779	484	3.1	1551	356	2.2	2112	247	1.6	10350	2061	[illegible]
1	29872	3980	13	17639	59	1527	9	4313	236	1.3	3681	24	0.1	1343	98	0.6	4131	499	2.8	1668	372	2.1	2503	298	1.7	12233	2453	[illegible]
2	32113	4579	14	18466	58	1800	10	4391	246	1.3	3654	23	0.1	1327	96	0.5	4534	624	3.4	1782	427	2.3	2778	384	2.1	13647	2779	[illegible]
3	33369	5274	16	18412	55	1910	10	4103	273	1.5	3704	25	0.1	1295	101	0.5	4478	647	3.5	1881	467	2.5	2951	397	2.2	14957	3364	1[illegible]
4	34790	6215	18	18598	53	2288	12	4016	274	1.5	3560	64	0.3	1264	117	0.6	4524	734	3.9	2089	605	3.3	3145	494	2.7	16192	3927	1[illegible]
5	33826	6452	19	17865	53	2412	14	3631	253	1.4	3336	55	0.3	1229	109	0.6	4220	732	4.1	2339	691	3.9	3110	572	3.2	15961	4040	1[illegible]
6	34086	7267	21	17784	52	2637	15	3628	302	1.7	3151	67	0.4	1188	124	0.7	4252	782	4.4	2442	754	4.2	3123	608	3.4	16302	4630	1[illegible]
7	34076	7803	23	17288	51	2786	16	3433	300	1.7	2835	69	0.4	1100	117	0.7	4203	791	4.6	2581	819	4.7	3136	690	4.0	16788	5017	1[illegible]
8	33244	8094	24	16937	51	2958	17	3344	320	1.9	2599	74	0.4	1039	128	0.8	4199	791	4.7	2761	991	5.9	2995	654	3.9	16307	5136	1[illegible]
9	32156	8487	26	16196	50	3039	19	3137	312	1.9	2442	57	0.4	1001	139	0.9	4179	872	5.4	2597	971	6.0	2840	688	4.2	15960	5448	1[illegible]
0	32756	9201	28	16363	50	3310	20	3104	350	2.1	2517	83	0.5	966	152	0.9	4403	974	6.0	2674	1071	6.5	2699	680	4.2	16393	5891	1[illegible]
1	32632	9682	30	16483	51	3543	21	3095	386	2.3	2519	96	0.6	964	127	0.8	4495	1050	6.4	2775	1171	7.1	2635	713	4.3	16149	6139	1[illegible]
2	32958	10247	31	16935	51	3754	22	3141	376	2.2	2551	104	0.6	980	139	0.8	4669	1168	6.9	2955	1274	7.5	2639	693	4.1	16023	6493	2[illegible]
3	32647	10423	32	16862	52	3890	23	3286	451	2.7	2621	138	0.8	932	115	0.7	4693	1233	7.3	2730	1262	7.5	2550	691	4.1	15785	6533	2[illegible]
4	32775	10875	33	17016	52	4174	25	3269	458	2.7	2822	125	0.7	960	150	0.9	4350	1204	7.1	3108	1487	8.7	2507	750	4.4	15759	6701	2[illegible]
5	33209	11145	34	17117	52	4206	25	3298	489	2.9	2979	165	1.0	946	152	0.9	4448	1195	7.0	2973	1456	8.5	2473	749	4.4	16092	6939	2[illegible]

I09.17,25,33,41,49,57,65,73,81,89,97,A5,83.

PH. D AWARDS TO U.S. CITIZENS BY BROAD FIELD, RACIAL/ETHNIC GROUP AND SEX, 1975 - 1985

Year	Total	Men	Women	% W	Am. Ind. Men	Am. Ind. Women	Asian Men	Asian Women	Black Men	Black Women	Hispanic Men	Hispanic Women	% Min	White Men	White Women
TOTAL ALL FIELDS															
1975	25976	19777	6199	24	27	9	222	64	650	349	242	61	6	18636	5716
1976	26182	19551	6631	25	31	9	244	90	652	443	253	87	7	18371	6002
1977	25008	18299	6709	27	43	22	251	88	684	432	310	113	8	17011	6054
1978	23767	16811	6956	29	50	10	287	103	584	449	317	156	8	15573	6238
1979	23947	16487	7460	31	56	25	311	117	551	505	308	154	8	15261	6659
75-97	124880	90925	33955	27	207	75	1315	462	3121	2178	1430	571	7	84852	30669
1980	23970	15962	8008	33	46	29	313	145	499	533	256	156	8	14848	7145
1981	24006	15603	8403	35	56	29	315	150	499	514	275	189	8	14458	7521
1982	23785	15137	8648	36	44	33	281	171	483	564	344	191	9	13985	7689
1983	23704	14661	9043	38	50	30	312	180	412	509	288	250	9	13599	8074
1984	23394	14285	9109	39	53	20	338	174	427	526	313	222	9	13154	8167
80-85	118859	75648	43211	36	249	141	1559	820	2320	2646	1476	1008	9	70044	38596
1985	22717	13793	8924	39	39	54	328	187	374	531	298	251	9	12750	7891
Total	266456	180366	86090	32	495	270	3202	1469	5815	5355	3204	1840	8	167646	77156
PHYSICAL SCIENCES															
1975	3476	3199	277	8	3	0	46	4	36	5	25	2	3	3089	266
1976	3265	2969	296	9	0	0	56	14	22	6	22	1	4	2869	275
1977	3149	2851	298	9	7	0	53	3	39	3	41	5	5	2711	282
1978	2943	2630	313	11	4	1	67	14	44	7	24	2	6	2491	289
1979	3042	2684	358	12	4	0	63	14	44	4	27	10	5	2546	330
75-97	15875	14333	1542	10	18	1	285	49	185	25	139	20	5	13706	1442
1980	2847	2487	360	13	4	1	64	11	18	7	22	5	5	2379	336
1981	2893	2536	357	12	2	0	61	13	26	5	31	5	5	2416	334
1982	3028	2593	435	14	5	0	55	26	23	7	25	9	5	2485	393
1983	3022	2563	459	15	9	0	69	24	21	5	22	15	5	2442	415
1984	3025	2539	486	16	7	0	82	24	30	5	44	9	7	2376	448
80-84	14815	12718	2097	14	27	1	331	98	118	29	144	43	5	12098	1926
1985	2947	2454	493	17	4	0	74	26	25	5	32	10	6	2319	4[illegible]
Total	33637	29505	4132	12	49	2	690	173	328	59	315	73	5	28123	3820

109,17,25,33,41,49,57,65,73,81,89,97,A5,83.

ENGINEERING															
1975	1641	1609	32	2	1	0	60	1	11	0	15	0	5	1522	31
1976	1506	1473	33	2	0	0	57	2	12	0	15	0	6	1389	31
1977	1401	1361	40	3	1	0	66	1	10	1	12	0	7	1266	38
1978	1167	1140	27	2	2	0	63	0	9	0	19	0	8	1047	27
1979	1189	1154	35	3	3	0	69	0	16	1	14	1	9	1052	33
75-79	6904	6737	167	2	7	0	315	4	58	2	81	1	7	6276	160
1980	1173	1115	58	5	3	0	71	2	9	2	17	1	9	1015	53
1981	1118	1069	49	4	4	0	71	6	16	0	12	0	10	966	43
1982	1122	1049	73	7	3	0	69	3	9	0	22	1	10	946	69
1983	1119	1039	80	7	0	0	63	3	18	1	15	3	9	943	73
1984	1193	1107	86	7	3	0	79	16	11	1	18	4	11	996	65
80-84	5725	5379	346	6	13	0	353	30	63	4	84	9	10	4866	303
1975	1223	1109	114	9	1	0	76	14	16	3	16	0	10	1000	97
Total	13852	13225	627	5	21	0	744	48	137	9	181	10	8	12142	560
LIFE SCIENCES															
1975	3801	2985	816	21	1	1	33	21	37	19	34	5	4	2880	770
1976	3839	3027	812	21	3	0	54	23	40	31	26	3	5	2904	755
1977	3742	2914	828	22	7	1	41	22	30	34	22	9	4	2814	762
1978	3791	2890	901	24	8	0	64	26	45	28	31	14	6	2742	833
1979	3943	2928	1015	26	3	0	69	36	29	33	28	14	5	2799	932
75-79	19116	14744	4372	23	22	2	261	128	181	145	141	45	5	14139	4052
1980	4168	3021	1147	28	5	2	66	36	37	28	24	12	5	2889	1063
1981	4331	3071	1260	29	9	4	72	37	31	42	34	14	6	2925	1163
1982	4476	3102	1374	31	7	5	65	47	33	36	41	21	6	2956	1265
1983	4333	2888	1445	33	6	2	75	57	30	34	24	24	6	2753	1328
9184	4442	2954	1488	33	9	3	77	56	36	39	33	21	6	2799	1369
80-84	21750	15036	6714	31	36	16	355	233	167	179	156	92	6	14322	6188
1985	4338	2841	1497	35	9	9	79	49	37	33	43	32	7	2673	1374
Total	45204	32621	12583	28	67	27	695	410	385	357	340	169	5	31134	11614

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I09,17,25,33,41,49,57,65,73,81,89,97,A5,B3.

SOCIAL SCIENCES															
1975	4935	3609	1326	27	6	2	26	10	106	47	47	9	5	3424	1258
1976	5139	3677	1462	28	7	0	36	12	104	57	47	8	5	3483	1305
1977	4960	3457	1503	30	6	7	38	17	123	65	51	16	7	3239	1398
1978	4814	3255	1559	32	5	1	31	21	97	74	62	28	7	3060	1435
1979	4784	3083	1701	36	12	5	41	23	95	93	63	23	7	2872	1557
75-79	24632	17081	7551	31	36	15	172	83	525	336	270	84	6	16078	7033
1980	4767	2989	1778	37	8	5	43	36	83	97	65	28	8	2790	1612
1981	4983	3060	1923	39	7	5	45	31	88	90	64	39	7	2856	1758
1982	4688	2805	1883	40	13	7	36	31	102	91	78	37	8	2576	1717
1983	4891	2806	2085	43	9	3	36	28	83	102	80	56	8	2598	1896
1984	4662	2548	2114	45	8	2	41	26	86	108	79	49	9	2334	1929
80-84	23991	14208	9783	41	45	22	201	152	442	488	366	209	8	13154	8912
1985	4432	2415	2017	46	8	9	34	28	79	95	62	59	8	2232	1826
Total	53055	33704	19351	36	89	46	407	263	1046	919	698	352	7	31464	17771
HUMANITIES															
1975	4249	2799	1450	34	3	2	17	13	60	27	40	24	4	2679	1384
1976	4126	2698	1428	35	2	1	15	18	53	35	47	24	5	2581	1347
1977	3845	2438	1407	37	3	2	25	13	65	30	65	38	6	2280	1324
1978	3558	2193	1365	38	7	1	17	12	48	32	55	54	6	2066	1266
1979	3436	2111	1325	39	7	3	29	16	63	56	60	47	8	1952	1203
75-79	19214	12239	6975	36	22	9	103	72	289	180	267	187	6	11558	6524
1980	3238	1931	1307	40	1	2	23	17	56	41	39	40	7	1812	1207
1981	3090	1798	1292	42	8	4	19	14	43	41	49	43	7	1679	1190
1982	2938	1650	1288	44	2	4	14	14	46	50	55	52	8	1533	1168
1983	2902	1604	1298	45	4	2	16	19	36	37	46	50	7	1502	1190
1984	2877	1554	1323	46	3	2	13	15	45	49	57	42	8	1436	1215
80-84	15045	8537	6508	43	18	14	85	79	226	218	246	227	7	7962	5970
1985	2780	1556	1224	44	2	6	26	17	31	36	51	45	8	1446	1120
Total	37039	22332	14707	40	42	29	214	168	546	434	564	459	7	20966	13614

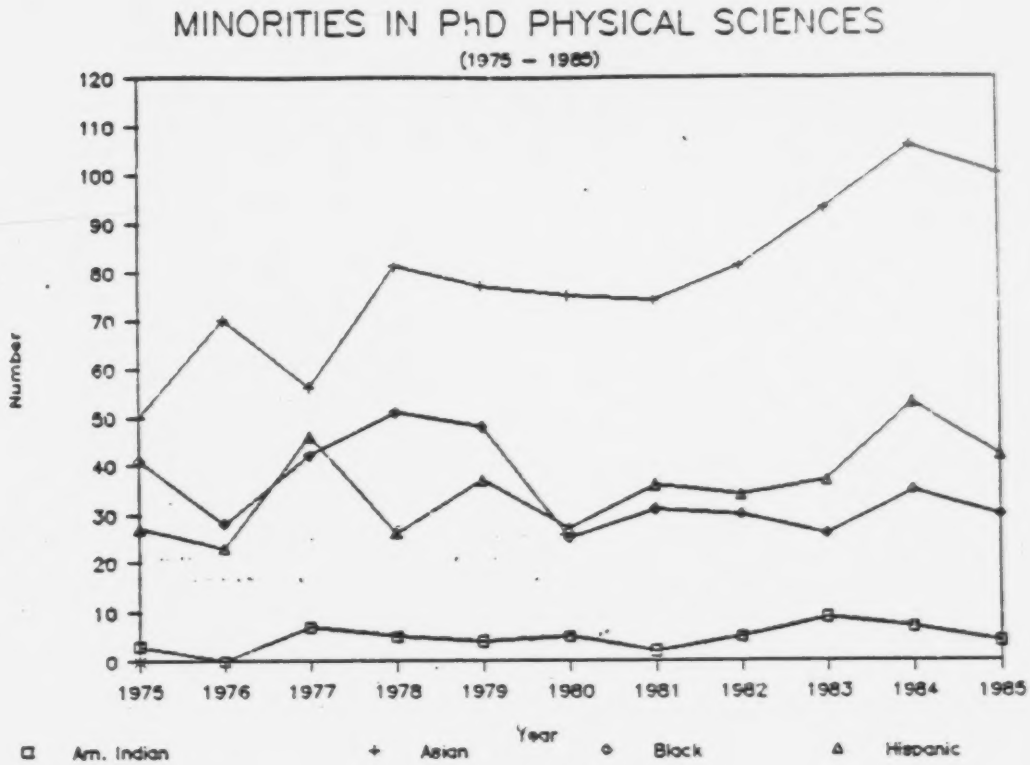
109.17,25,33.41,49,57,65,73.81,89.97,A5.83.

PROFESSIONAL + OTHER FIELDS

1975	1271	1059	212	17	0	1	13	3	24	18	9	1	5	1013	189
1976	1382	1082	300	22	4	2	8	2	35	23	19	7	7	1016	266
1977	1312	1019	293	22	2	0	12	2	25	24	20	3	7	960	264
1978	1319	1032	287	22	2	0	13	5	42	21	20	8	8	955	253
1979	1309	958	351	27	3	1	7	7	40	24	11	2	7	897	317
75-79	6593	5150	1443	22	11	4	53	19	166	110	79	21	7	4841	1289
1980	1281	902	379	30	0	1	18	6	36	27	12	3	8	836	342
1981	1231	831	400	32	2	1	10	7	28	39	9	11	9	782	342
1982	1362	891	471	35	1	1	18	5	36	37	13	5	9	823	423
1983	1302	870	432	33	1	0	19	9	25	37	11	11	9	814	375
1984	1394	876	518	37	4	0	19	4	28	29	21	13	8	804	472
80-84	6570	4370	2200	33	8	3	84	31	153	169	66	43	8	4059	1954
1985	1329	833	496	37	3	3	15	8	33	41	12	17	10	770	427
Total	14492	10353	4139	29	22	10	152	58	352	320	157	81	8	9670	3670

EDUCATION

1975	6603	4517	2086	32	13	3	27	12	376	233	72	20	11	4029	1818
1976	6925	4625	2300	33	15	6	18	19	386	288	77	44	12	4129	1943
1977	6599	4259	2340	35	17	12	16	25	392	275	93	42	13	3741	1986
1978	6175	3671	2504	41	22	7	32	25	299	287	106	50	13	3212	2135
1979	6244	3569	2675	43	24	16	33	21	264	294	105	57	13	3143	2287
75-79	32546	20441	11905	37	91	44	126	102	1717	1377	453	213	13	18254	10169
1980	6496	3517	2979	46	25	18	28	37	260	331	77	67	13	3127	2526
1981	6360	3238	3122	49	24	15	37	42	267	297	76	77	13	2834	2691
1982	6171	3047	3124	51	13	16	24	45	234	343	110	66	14	2666	2654
1983	6135	2891	3244	53	21	23	34	40	199	293	90	91	13	2547	2797
1984	5801	2707	3094	53	19	13	27	33	191	295	61	84	12	2409	2669
80-84	30963	15400	15563	50	102	85	150	197	1151	1559	414	385	13	13583	13337
1985	5668	2585	3083	54	12	27	24	45	157	318	82	98	13	2310	2595
Total	69177	38626	30551	44	205	156	300	344	3025	3254	949	696	13	34147	26101


MINORITIES IN PhD PHYSICAL SCIENCES
(1975 – 1985)
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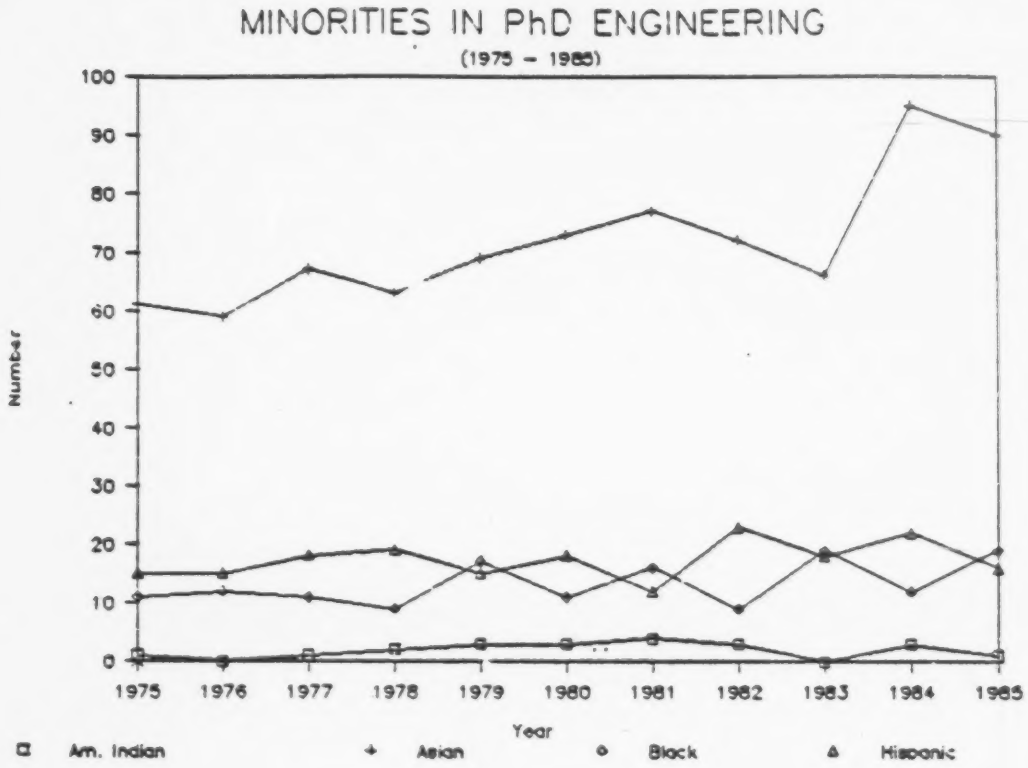
Year
Am. Indian
Asian
Black
Hispanic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Asian
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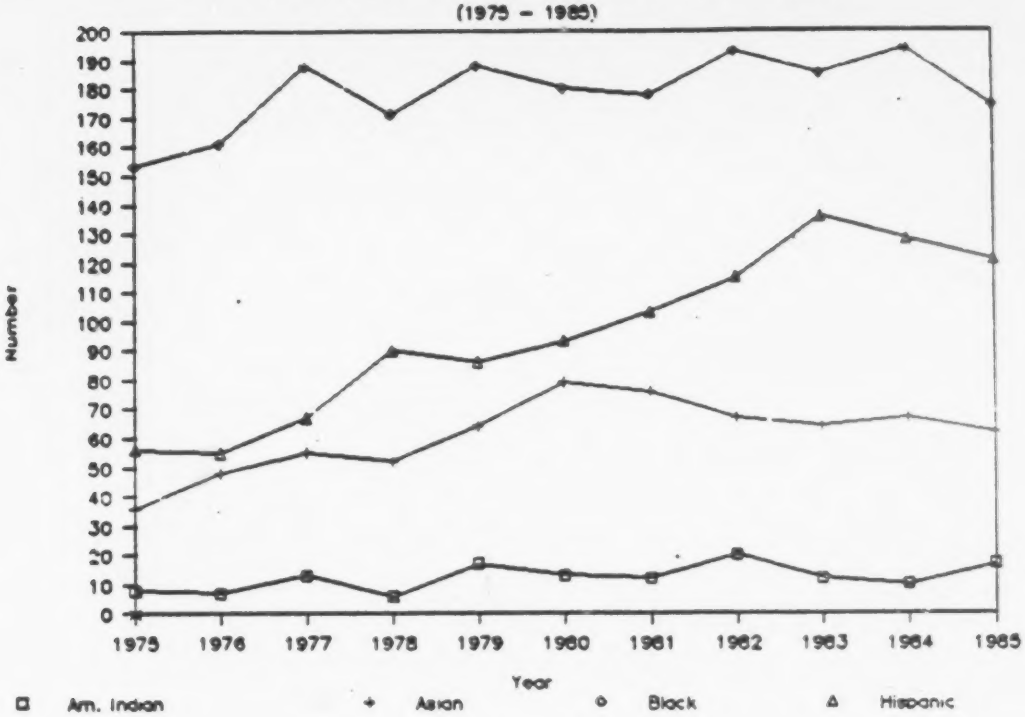
Hispanic

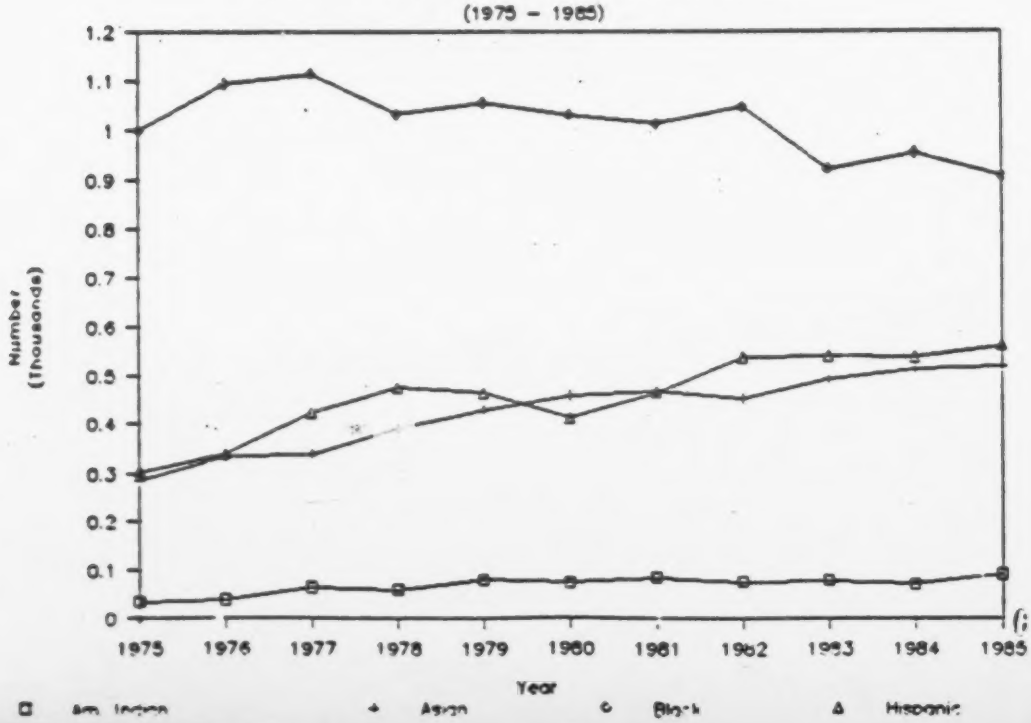
MINORITIES IN PhD SOCIAL SCIENCES

(1975 – 1985)



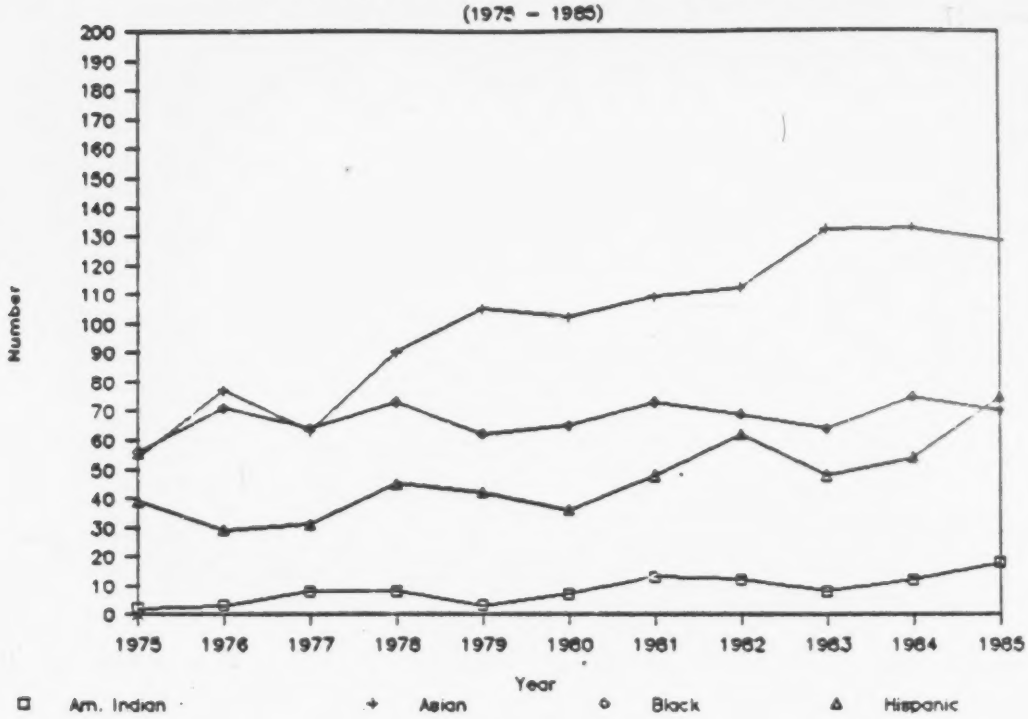
MINORITIES IN ALL PhD FIELDS

(1975 – 1985)



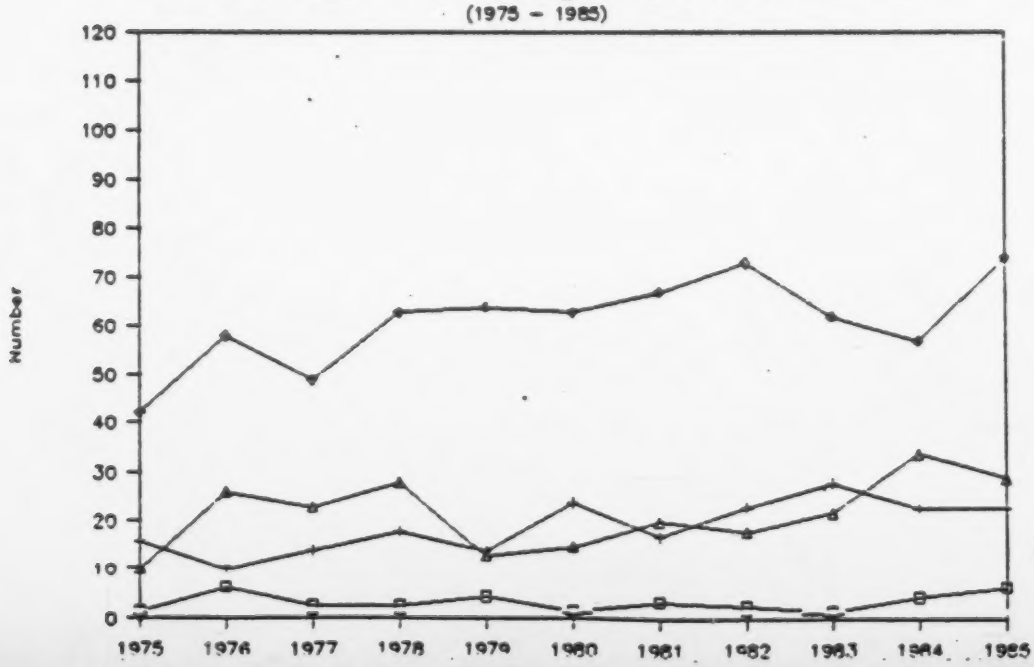
MINORITIES IN PhD LIFE SCIENCES

(1975 – 1985)

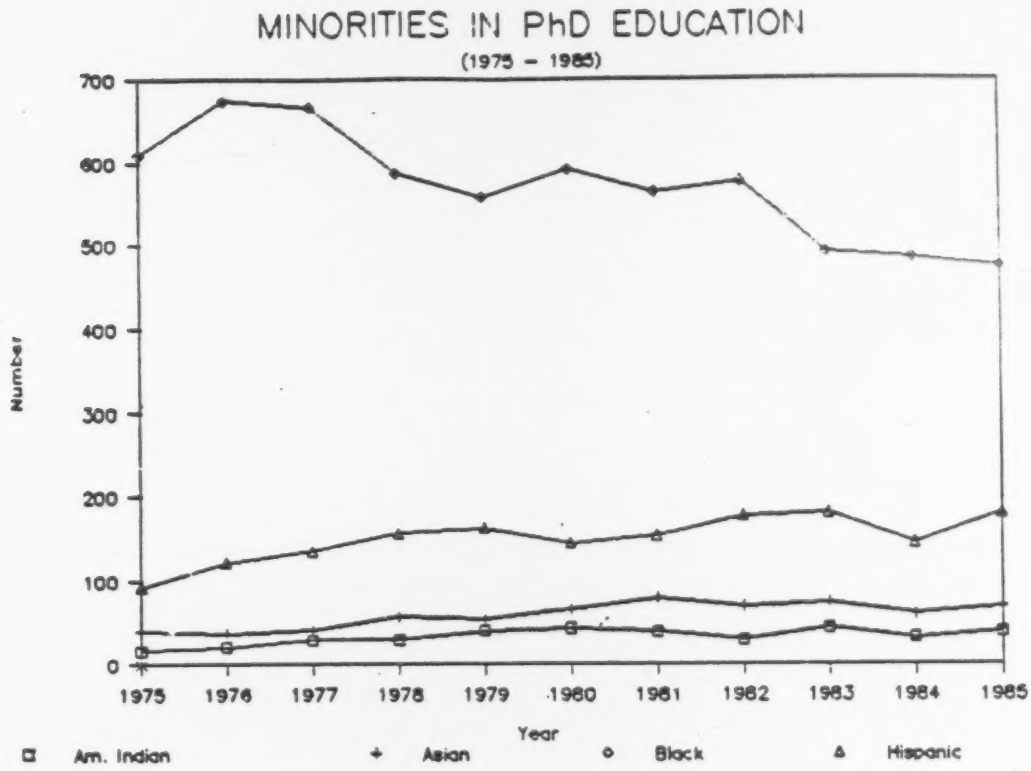


MINORITIES IN PROFESSIONAL Ph.D FIELDS

(1975 – 1985)



000.20


MINORITIES IN PhD EDUCATION
(1975 - 1985)
700
600
500
400
300
200
100
0
Number
1975
1976
1977
1978
1979
1980
1981
1982
1983
1984
1985
Year
Am. Indian
Asian
Black
Hispanic

60 v 2.

ENROLLMENT OF FULL TIME SCIENCE AND ENGINEERING GRADUATE STUDENTS IN PH.D. DEPARTMENTS BY BROAD FIELD

1965-1984

BY BROAD FIELD AND SUBFIELD

1974-1984

FULL TIME SCIENCE AND ENGINEERING GRADUATE STUDENTS IN PH.D. DEPARTMENTS WITH FEDERAL SUPPORT BY BROAD FIELD

1965-1984

BROAD FIELD AND SUBFIELD

1974-1984

ENROLLMENT & FEDERAL SUPPORT OF FULL-TIME SCIENCE & ENGINEERING GRADUATE STUDENTS IN PhD DEPARTMENTS

ENROLLMENT

Field	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
otal	94867	118273	128043	138283	141199	145970	142169	149937	151609	195455	210307	214082	217453	216608	223409	230535	234194	236939	243596	246848
Eng	25537	26816	29751	30366	30820	31491	30902	30908	29448	33635	37105	36489	36675	37057	39344	41939	44817	48687	53475	54751
Physical										21255	21317	21623	21747	21497	21797	22254	22600	23330	24492	25149
Envt										8381	8919	9439	10019	9997	10171	10265	10491	10873	11466	11283
Phy Total	25943	28800	29929	30916	30175	29522	28209	27544	27173	29636	30236	31062	31766	31494	31968	32519	33091	34203	35958	36432
Math										10003	10038	10156	9816	9296	9136	9368	9680	10174	10312	10591
Comp										3736	4114	4379	4196	4426	5073	5900	6465	7908	9308	10117
M/C Total	9339	10826	11181	11700	11727	12155	11816	11909	11495	13739	14152	14535	14010	13722	14209	15268	16145	18082	19620	20708
Agri										7614	8507	9042	9296	9259	9371	9591	9630	9500	9397	9327
Biolog										32175	34541	35231	36228	35974	35837	35817	35454	35226	35187	35980
Health										15241	16587	17744	18779	19942	21263	22303	22111	20927	20582	20914
Life Tot	12324	20006	23447	26597	27588	29668	28888	34083	38704	55030	59635	62017	64303	65215	66471	67711	67195	65653	65166	64221
Psych	6056	9516	9903	11317	11918	12656	12781	14282	13760	18866	19672	21406	21266	20711	20737	21580	21544	21103	21322	21603
Social	15668	22309	23832	27387	28971	30478	29573	31211	30912	44549	49507	48573	49433	48409	50680	51518	51402	49211	48055	47133

FEDERAL SUPPORT

Field	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
Total		44617	53518	48402	51620	50256	49916	45029	41336	47989	48249	46593	50378	51269	52871	52939	50897	47206	47445	47764
Eng		10853	13486	9269	12334	12201	12395	11246	10273	10178	10280	10565	10537	10451	10757	11107	10923	11005	11916	11500
Physical										6156	6256	6409	6574	6943	7418	7655	7899	7644	8050	8549
Envt										2572	2637	2817	3055	3168	3465	3369	2965	2808	2845	2823
Phy Total		13269	147[illegible]	12104	13187	12088	11165	9687	8750	8728	8893	9226	9629	10111	10883	11024	10864	10452	10895	11372
Math										860	693	714	762	772	855	842	782	802	747	755
Comp										720	745	711	675	699	775	879	944	973	1045	1217
M/C Total		3226	3520	2905	3223	2936	2427	1908	1497	1580	1438	1425	1437	1471	1630	1721	1726	1775	1792	1972
Agri										1605	1629	1622	1671	1759	1752	1778	1710	1654	1510	1350
Biological										9605	9894	9706	9953	10171	10835	10725	10505	10055	10161	10532
Health										5606	6063	6442	7317	7690	8025	8184	7653	6120	5556	5562
Life Tota		8461	10904	8484	11513	11710	12850	12037	12209	16816	17586	17770	18941	19620	20612	20687	19868	17829	17227	17444
Psych		3923	4673	4541	5127	5127	4977	4691	3982	4408	4307	4057	3936	3936	3438	3189	2895	2283	1980	1942
Social		4885	6137	5436	6236	6194	6102	5440	4596	6279	5745	5550	5898	5680	5551	5211	4621	3862	3635	3534

Note: Field data in 1968 include only data from departments responding in three successive years. Total includes all students with federal support.

00023

17,25,33,41,49,57,65,73,81,89,97,A5,B5.

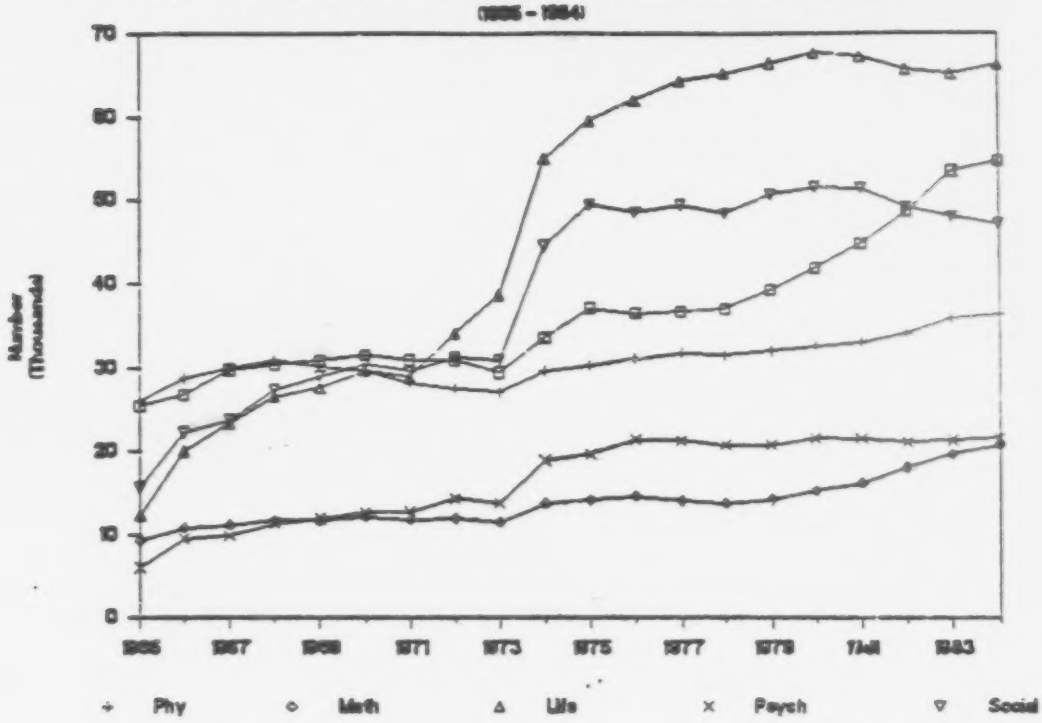
PERCENT OF FULL-TIME SCIENCE & ENGINEERING GRADUATE STUDENTS IN PhD DEPARTMENTS WITH FEDERAL SUPPORT

PERCENT SUPPORTED

ld	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
cent Supported																				
al	0	38	42	35	37	34	35	30	27	25	23	23	23	24	24	23	22	20	19	19
0	0	40	45	31	40	39	40	34	35	30	28	29	29	28	27	26	24	23	22	21
hysical										29	29	30	30	32	34	34	35	33	33	34
nvat										31	30	30	30	32	34	33	28	26	25	25
v Total	0	46	49	39	44	41	40	35	32	29	29	30	30	32	34	34	33	31	30	31
ath										9	7	7	8	8	9	9	8	8	7	7
ose										19	18	16	16	16	15	15	15	12	11	12
C Total	0	30	31	25	27	24	21	16	13	12	10	10	10	11	11	11	11	10	9	10
ori										21	19	18	18	19	19	19	18	17	16	14
iology										30	29	28	27	28	30	30	30	29	29	29
ealth										37	37	36	39	38	38	37	35	29	27	27
fe	0	42	47	32	42	39	44	35	32	31	29	29	29	30	31	31	30	27	26	26
ych	0	41	47	40	43	41	39	33	29	23	22	19	19	19	17	15	13	11	9	9
cial	0	22	26	20	22	20	21	17	15	14	12	11	12	12	11	10	9	8	8	7

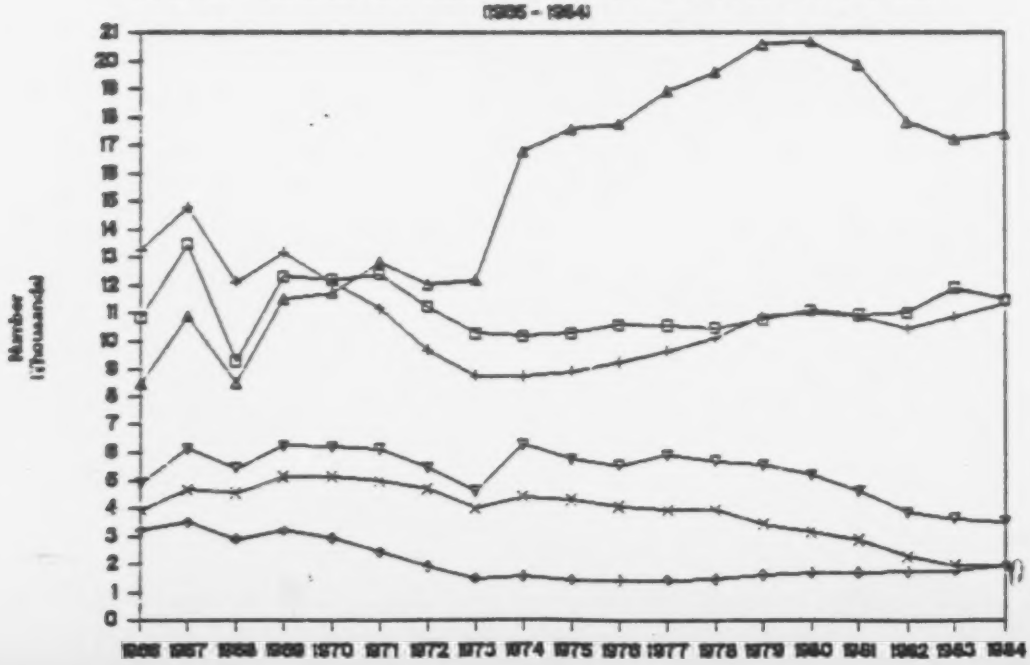
NO OF GRAD STUDENTS ENROLLED BY FIELD

(1965 - 1984)



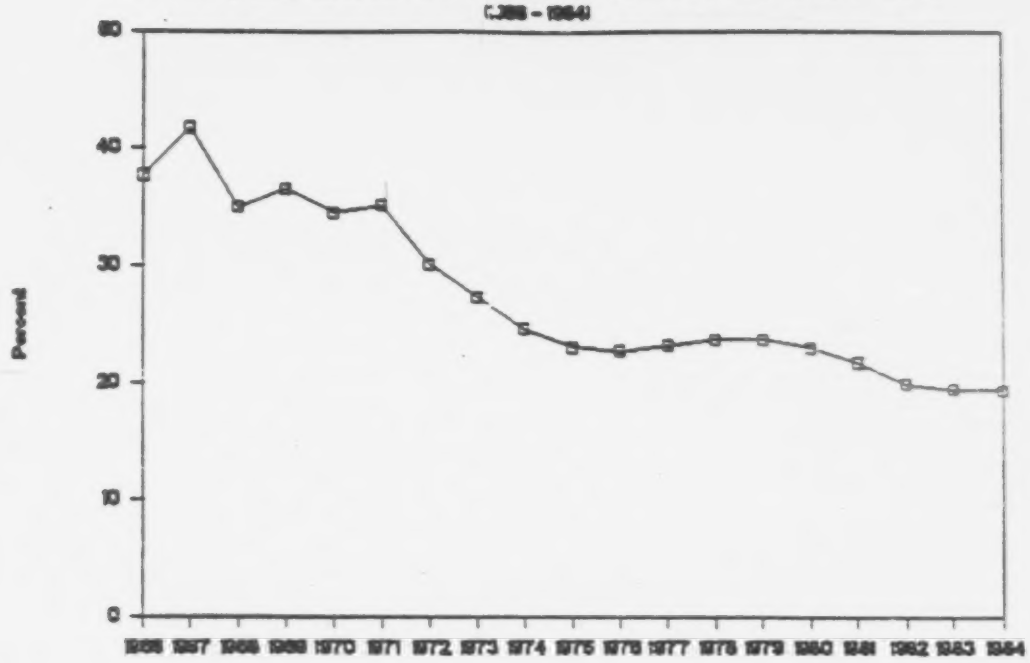
NO OF GRAD STUDENTS SUPPORTED BY FIELD

(1965 - 1984)



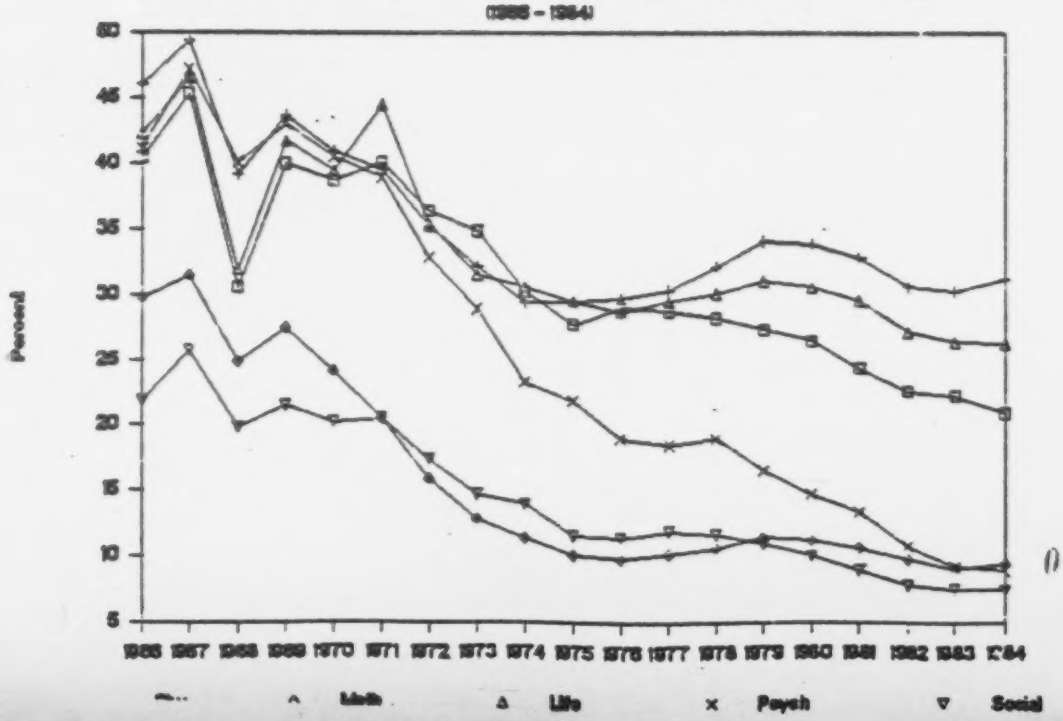
% FT S&E GRAD STUDENTS WITH FED SUPPORT

(1966 - 1984)



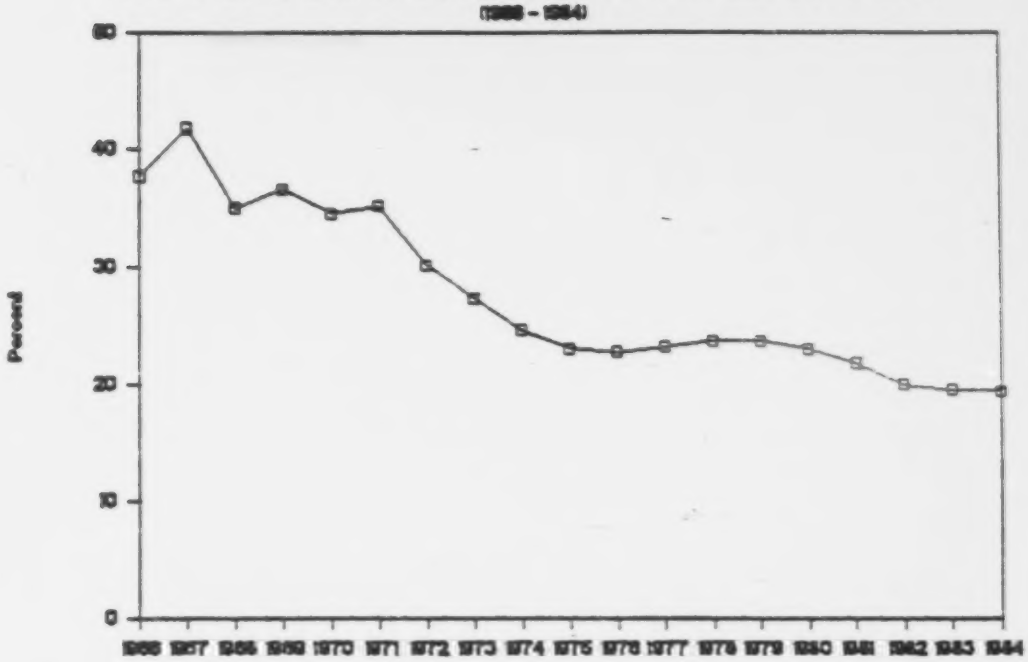
% GRAD STUDENTS W/FED SUPPORT BY FIELD

(1966 - 1984)



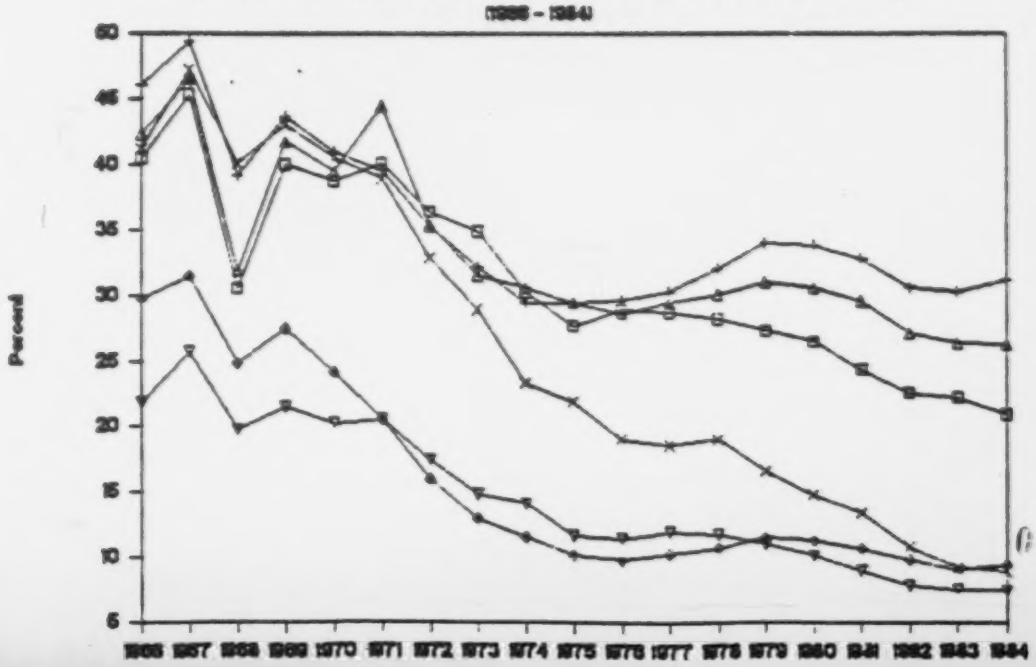
% FT S&E GRAD STUDENTS WITH FED SUPPORT

(1966 - 1984)



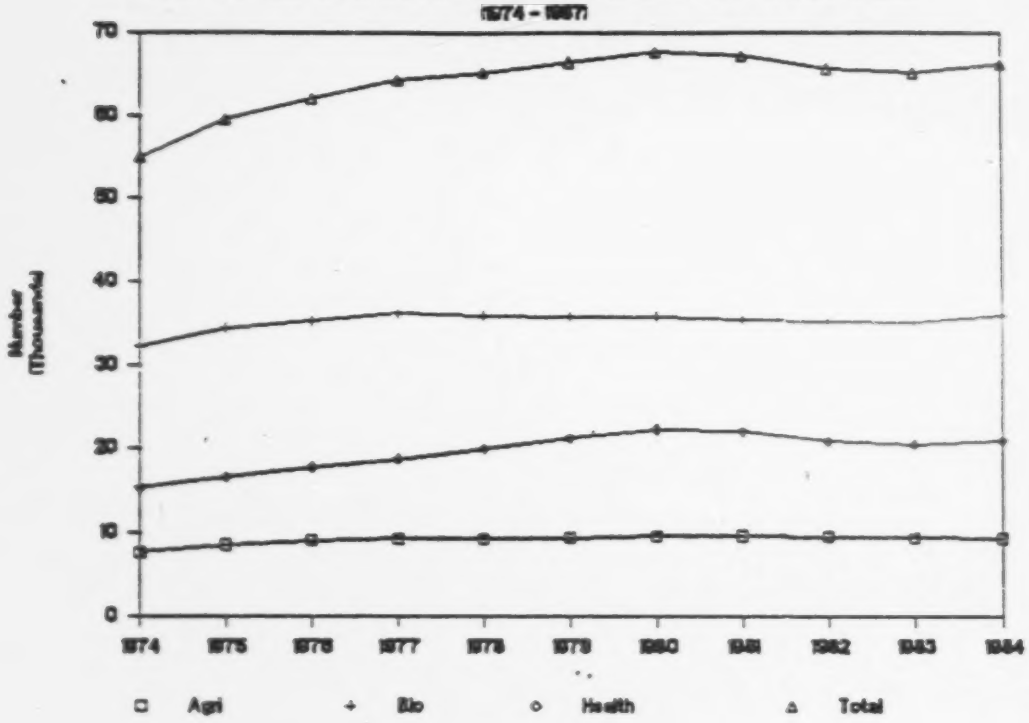
% GRAD STUDENTS W/FED SUPPORT BY FIELD

(1966 - 1984)



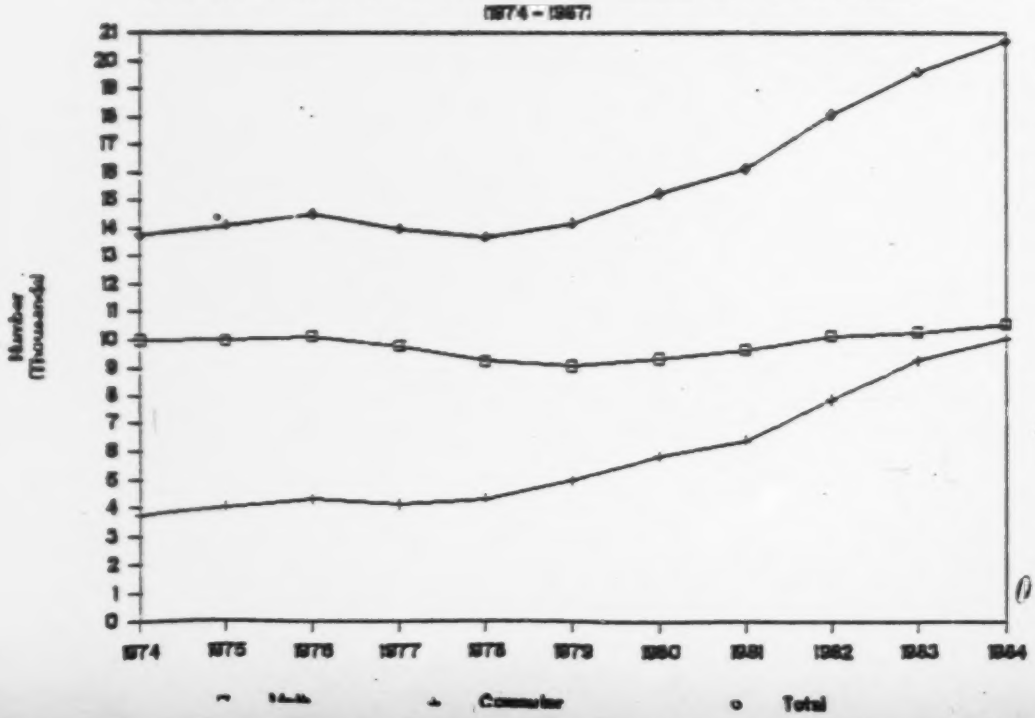
NO OF LIFE SCIENCE ENROLLED BY SUBFIELD

(1974 - 1987)



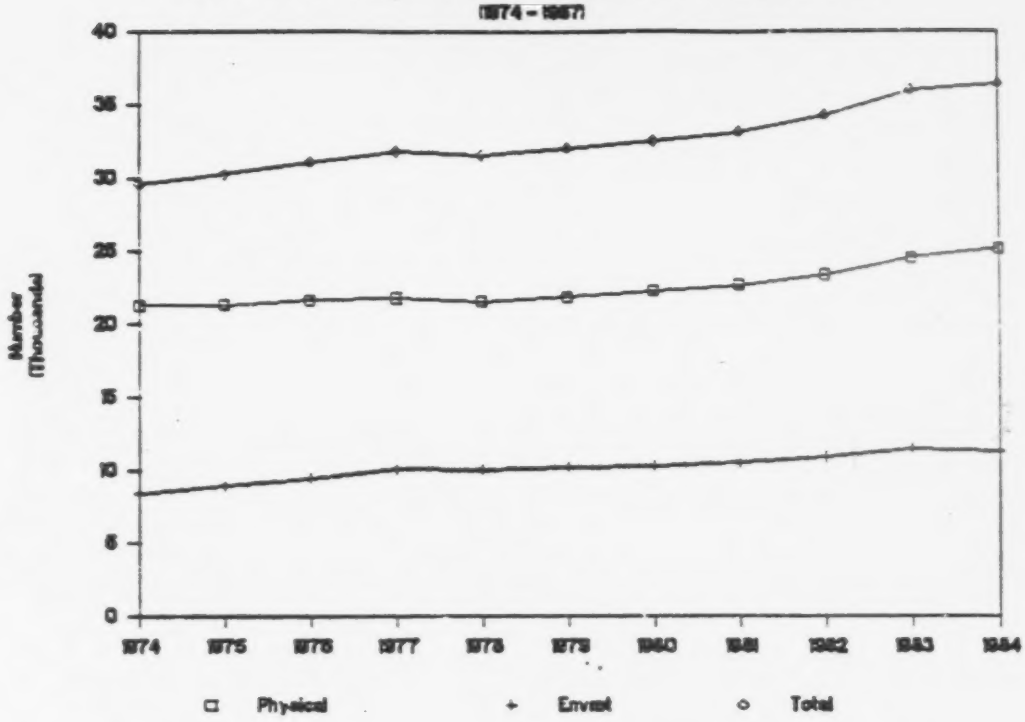
NO OF MATH/COMP ENROLLED BY SUBFIELD

(1974 - 1987)



NO OF PS/ENV ENROLLED BY SUBFIELD

(1974 - 1987)



ENROLLMENT OF FULL TIME SCIENCE AND ENGINEERING GRADUATE STUDENTS IN PH.D. DEPARTMENTS BY SEX AND FIELD

1972-1984

FULL TIME SCIENCE AND ENGINEERING GRADUATE STUDENTS IN PH.D. DEPARTMENTS WHO HAVE FEDERAL SUPPORT, BY SEX AND FIELD AND SUBFIELD

974-84

ENROLLMENT OF FULL-TIME SCIENCE & ENGINEERING GRADUATE STUDENTS IN PhD DEPARTMENTS BY SEX

---TOTAL---

Field	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
Total	149937	151609	195455	210307	214082	217453	216608	223409	230535	234194	236939	243596	246848
Eng	30908	29448	33635	37105	36489	36675	37057	39344	41939	44817	48687	53475	54751
Physical			21255	21317	21623	21747	21497	21797	22254	22600	23330	24492	25149
Envat			8381	8919	9439	10019	9997	10171	10265	10491	10873	11466	11283
Phy Total	27544	27173	29636	30236	31062	31766	31494	31968	32519	33091	34203	35955	36432
Math			10003	10038	10156	9814	9296	9136	9368	9680	10174	10312	10591
Comp			3736	4114	4379	4196	4426	5073	5900	6465	7908	9308	10117
M/C Total	11909	11495	13739	14152	14535	14010	13722	14209	15268	16145	18082	19620	20708
Agri			7614	8507	9042	9296	9259	9371	9591	9630	9500	9397	9327
Biolog			32175	34541	35231	36228	35974	35837	35817	35454	35226	35187	35980
Health			15241	16587	17744	18779	19982	21263	22303	22111	20927	20582	20914
Life Tot	34083	38704	55030	59635	62017	64303	65215	66471	67711	67195	65653	65166	66221
Psych	14282	13760	18866	19672	21406	21266	20711	20737	21580	21544	21103	21322	21603
Social	31211	30912	44549	49507	48573	49433	48409	50680	51518	51402	49211	48055	47133

---WOMEN---

Field	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
Total	26592	28704	46278	52222	57830	63150	67000	71075	75930	78901	79743	81449	82951
Eng	796	827	1353	1873	2038	2325	2900	3477	3923	4639	5242	5795	6169
Physical			2534	2680	2916	3051	3100	3330	3533	3815	4203	4632	4851
Envat			1038	1217	1503	1727	1900	2147	2335	2452	2665	2826	2721
Phy Total	2962	3000	3572	3897	4419	4778	5100	5477	5868	6267	6868	7458	7572
Math			2019	2121	2213	2133	2000	1996	2140	2358	2552	2666	2736
Comp			505	599	682	676	800	910	1232	1465	1968	2219	2351
M/C Total	2137	2063	2524	2720	2895	2809	2900	2906	3372	3823	4520	4885	5094
Agri			870	1130	1423	1725	1900	2111	2292	2242	2372	2369	2431
Biolog			9148	10021	10929	11854	12000	12769	13184	13354	13882	14038	14474
Health			7388	8600	10249	11736	13000	14070	14904	15114	14411	14228	14455
Life Tot	7701	9532	17406	19751	22601	25315	27000	28950	30380	30710	30665	30635	31360
Psych	5018	4994	7425	8318	9239	9662	9900	10125	10962	11371	11499	11724	12259
Social	7978	8249	13998	15663	16638	18261	19700	20140	21425	22091	20949	20952	20497

---MEN---

Field	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
Total	123345	122905	149177	158085	156252	154303	149608	145533	147479	151634	154451	155490	160645
Eng	30112	28621	32282	35232	34451	34350	34157	33580	35421	37200	39575	42892	47306
Physical	0	0	18721	18637	18707	18696	18397	18167	18264	18439	18397	18698	19641
Envat	0	0	7343	7702	7936	8292	8097	7850	7836	7813	7826	8047	8745
Phy Total	24582	24173	26064	26339	26643	26988	26394	26017	26100	26252	26223	26745	28386
Math	0	0	7984	7917	7943	7681	7296	7300	6996	7010	7128	7503	7576
Comp	0	0	3231	3515	3697	3520	3626	3516	3841	4435	4497	5689	6950
M/C Total	9772	9432	11215	11432	11640	11201	10822	10816	10837	11445	11625	13197	[illegible]
Agri	0	0	6744	7377	7619	7571	7359	7148	7079	7349	7258	7131	6966
Biolog	0	0	23027	24520	24302	24374	23974	23205	22653	22463	21572	21188	20713
Health	0	0	7853	7987	7495	7043	6982	5912	6359	7189	7700	6699	6127
Life Tot	26382	29172	37624	39884	39416	38988	38215	36265	36091	37001	36530	35018	33806
Psych	9264	6766	11441	11354	12167	11604	10811	10586	9775	10209	10045	9379	9063
Social	23233	22663	30551	33844	31935	31172	28709	28269	29255	29427	30453	28259	27558

Note: 1978 Women and Men estimated.

PERCENT OF FULL-TIME SCIENCE & ENGINEERING GRADUATE STUDENTS IN PhD DEPARTMENTS BY SEX

eld	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
---PERCENT WOMEN---													
Total	18	19	24	25	27	29	31	33	34	34	34	34	34
Eng	3	3	4	5	6	6	8	9	10	11	12	12	12
Physical			12	13	13	14	14	15	16	17	19	20	20
Envat			12	14	16	17	19	21	23	24	25	26	24
Phy Total	11	11	12	13	14	15	16	17	18	19	21	22	21
Math			20	21	22	22	22	21	23	25	26	26	27
Comp			14	15	16	16	18	21	24	25	30	28	25
M/C Total	18	18	18	19	20	20	21	21	24	25	28	27	26
Agri			11	13	16	19	21	23	24	23	25	25	26
Biolog			28	29	31	33	33	35	37	37	39	40	41
Health			48	52	58	62	65	70	70	68	65	68	70
Life Tot	23	25	32	33	36	39	41	44	46	45	46	47	48
Psych	35	36	39	42	43	45	48	49	53	53	53	56	57
Social	26	27	31	32	34	37	41	42	42	43	41	43	43
---PERCENT MEN---													
Total	82	81	76	75	73	71	69	67	66	66	66	66	66
Eng	97	97	96	95	94	94	92	91	90	89	88	88	88
Physical			88	87	87	86	86	85	84	83	81	80	80
Envat			88	86	84	83	81	79	77	76	75	74	76
Phy Total	89	89	88	87	86	85	84	83	82	81	79	78	79
Math			80	79	78	78	78	79	77	75	74	74	73
Comp			86	85	84	84	82	79	76	75	70	72	7[illegible]
M/C Total	82	82	82	81	80	80	79	79	76	75	72	73	7[illegible]
Agri			89	87	84	81	79	77	76	77	75	75	74
Biolog			72	71	69	67	67	65	63	63	61	60	59
Health			52	48	42	38	35	30	30	32	35	32	30
Life Tot	77	75	68	67	64	61	59	56	54	55	54	53	52
Psych	65	64	61	58	57	55	32	51	47	47	47	44	43
Social	74	73	69	68	66	63	59	58	58	57	59	57	57

PERCENT OF FULL-TIME SCIENCE & ENGINEERING GRADUATE STUDENTS IN PhD DEPARTMENTS BY SEX

---PERCENT WOMEN---

eld	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
Total	18	19	24	25	27	29	31	33	34	34	34	34	34
Eng	3	3	4	5	6	6	8	9	10	11	12	12	12
Physical			12	13	13	14	14	15	16	17	19	20	20
Envmt			12	14	16	17	19	21	23	24	25	26	24
Phy Total	11	11	12	13	14	15	16	17	18	19	21	22	21
Math			20	21	22	22	22	21	23	25	26	26	27
Comp			14	15	16	16	18	21	24	25	30	28	25
M/C Total	18	18	18	19	20	20	21	21	24	25	28	27	26
Agri			11	13	16	19	21	23	24	23	25	25	26
Biolog			28	29	31	33	33	35	37	37	39	40	41
Health			48	52	58	62	65	70	70	68	65	68	70
Life Tot	23	25	32	33	36	39	41	44	46	45	46	47	48
Psych	35	36	39	42	43	45	48	49	53	53	53	56	57
Social	26	27	31	32	34	37	41	42	42	43	41	43	43

---PERCENT MEN---

Total	82	81	76	75	73	71	69	67	66	66	66	66	66
Eng	97	97	96	95	94	94	92	91	90	89	88	88	88
Physical			88	87	87	86	86	85	84	83	81	80	80
Envmt			88	86	84	83	81	79	77	76	75	74	76
Phy Total	89	89	88	87	86	85	84	83	82	81	79	78	79
Math			80	79	78	78	78	79	77	75	74	74	73
Comp			86	85	84	84	82	79	76	75	70	72	7[illegible]
M/C Total	82	82	82	81	80	80	79	79	76	75	72	73	74
Agri			89	87	84	81	79	77	76	77	75	75	74
Biolog			72	71	69	67	67	65	63	63	61	60	59
Health			52	48	42	38	35	30	30	32	35	32	30
Life Tot	77	75	68	67	64	61	59	56	54	55	54	53	52
Psych	65	64	61	58	57	55	52	51	47	47	47	44	43
Social	74	73	69	68	66	63	59	58	58	57	59	57	57

600.32

with Federal Support

~~FEDERAL SUPPORT OF~~ FULL-TIME SCIENCE & ENGINEERING GRADUATE STUDENTS IN PhD DEPARTMENTS BY SEX

---TOTAL---

Field	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	198
Total	45029	41336	47989	48249	48593	50378	51269	52871	52939	50897	47206	47445	47764
Eng	11246	10273	10178	10280	10565	10537	10451	10757	11107	10923	11005	11916	11500
Physical			6156	6256	6409	6574	6943	7418	7655	7899	7644	8050	8569
Envt			2572	2637	2817	3055	3168	3465	3369	2965	2808	2845	2823
Phy Total	9687	8750	8728	8893	9226	9629	10111	10883	11024	10864	10452	10895	11372
Math			860	693	714	762	772	855	842	782	802	747	755
Comp			720	745	711	675	699	775	879	944	973	1045	1217
F/C Total	1908	1497	1580	1438	1425	1437	1471	1630	1721	1726	1775	1792	1972
Agri			1605	1629	1622	1671	1759	1752	1778	1710	1654	1510	1350
Biological			9605	9894	9706	9953	10171	[illegible]35	10725	10505	10055	10161	10532
Health			5606	6063	6442	7317	7690	8025	8184	7653	6120	5556	5562
Life Tota	12037	12209	16816	17586	17770	18941	19620	20612	20687	19868	17829	17227	17444
Psych	4691	3982	4408	4307	4057	3936	3936	3438	3189	2895	2283	1980	1942
Social	5460	4596	6279	5745	5530	5898	5680	5551	5211	4621	3862	3635	3534

---WOMEN---

Total			11016	12012	12896	14495	15500	16403	16925	16261	14647	14262	
Eng			313	358	441	524	630	748	843	858	950	1014	
Physical			547	607	663	756	850	942	1011	1134	1175	1311	
Envt			248	284	361	466	570	678	708	687	638	665	
Phy Total			795	891	1024	1222	1400	1620	1719	1821	1813	1976	
Math													
Comp													
F/C Total			153	151	150	142	170	201	219	216	233	235	
Agri			152	189	231	296	320	343	412	398	379	362	
Biolog			2684	2916	2942	3165	3500	3747	3799	3734	3749	3918	
Health			3022	3625	4280	5295	5500	5757	5991	5694	4673	4192	
Life Total			5858	6730	7453	8756	9300	9847	10202	9826	8801	8472	
Psych			1762	1868	1792	1763	1700	1635	1621	1477	1156	1059	
Social			2135	2014	2036	2088	2200	2352	2321	2063	1694	1506	

---MEN---

Total			36973	36237	35697	35883	35769	36468	36014	34636	32559	33183	
Eng			9865	9922	10124	10013	9821	10009	10264	10065	10055	10902	
Physical			5609	5649	5746	5818	6093	6476	6644	6765	6469	6739	
Envt			2324	2353	2456	2589	2598	2787	2661	2278	2170	2180	
Phy Total			7933	8002	8202	8407	8711	9263	9305	9043	8639	8919	
Math			860	693	714	762	772	855	842	782	802	747	
Comp			720	745	711	675	699	775	879	944	973	1045	
F/C Total			1427	1287	1275	1295	1301	1429	1502	1510	1542	1557	
Agri			1453	1440	1391	1375	1439	1409	1366	1312	1275	1148	
Biologic			6921	6978	6764	6788	6671	7088	6926	6771	6306	6243	
Health			[illegible]	2438	2162	2022	2190	2268	2193	1959	1447	1364	
Life Tota			10958	10856	10317	10185	10320	10765	10485	10042	9028	8755	
Psych			2646	2439	2265	2173	2236	1803	1568	1418	1127	921	
Social			4144	3731	3514	3810	3480	3199	2890	2558	2168	2129	

PERCENT OF FEDERAL SUPPORT TO FULL-TIME SCIENCE & ENGINEERING GRADUATE STUDENTS IN PhD DEPARTMENTS BY SEX

Field	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
---WOMEN---													
Total			23	25	27	29	30	31	32	32	31	30	
Eng			3	3	4	5	6	7	8	8	9	9	
Physical			9	10	10	11	12	13	13	14	15	16	
Envt			10	11	13	15	18	20	21	23	23	23	
Phy Total			9	10	11	13	14	15	16	17	17	18	
Math			0	0	0	0	0	0	0	0	0	0	
Comp			0	0	0	0	0	0	0	0	0	0	
M/C Total			10	11	11	10	12	12	13	13	13	13	
Agri			9	12	14	18	18	20	23	23	23	24	
Biological			28	29	30	32	34	35	35	36	37	39	
Health			54	60	66	72	72	72	73	74	76	75	
Life Total			35	38	42	46	47	48	49	49	49	49	
Psych			40	43	44	45	43	48	51	51	51	53	
Social			34	35	37	35	39	42	45	45	46	41	
---MEN---													
Total			77	75	73	71	70	69	68	68	69	70	
Eng			97	97	96	95	94	93	92	92	91	91	
Physical			91	90	90	89	88	87	87	86	85	84	
Envt			90	89	87	85	82	80	79	77	77	77	
Phy Total			91	90	89	87	86	85	84	83	83	82	
Math													
Comp													
M/C Total			90	89	89	90	88	88	87	87	87	87	
Agri			91	88	86	82	82	80	77	77	77	76	
Biological			72	71	70	68	66	65	65	64	63	61	
Health			46	40	34	28	28	28	27	26	24	25	
Life Total			65	62	58	54	53	52	51	51	51	51	
Psych			60	57	56	55	57	52	49	49	49	47	
Social			66	65	63	65	61	58	55	55	56	59	

PERCENT OF FULL TIME SCIENCE & ENGINEERING GRADUATE STUDENTS IN PhD DEPARTMENTS WITH FEDERAL SUPPORT BY SEX

ALL STUDENTS

Field	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
Total	30	27	25	23	23	23	24	24	23	22	20	19	19
Eng	36	35	30	28	29	29	28	27	26	24	23	22	21
Physical			29	29	30	30	32	34	34	35	33	33	34
Envat			31	30	30	30	32	34	33	28	26	25	25
Phy Total	35	32	29	29	30	30	32	34	34	33	31	30	31
Math			9	7	7	8	8	9	9	8	8	7	7
Comp			19	18	16	16	16	15	15	15	12	11	12
M/C Total	16	13	12	10	10	10	11	11	11	11	10	9	10
Agri			21	19	18	18	19	19	19	18	17	16	14
Biology			30	29	28	27	28	30	30	30	29	29	29
Health			37	37	36	39	38	38	37	35	29	27	27
Life	35	32	31	29	29	29	30	31	31	30	27	26	26
Psych	33	29	23	22	19	19	19	17	15	13	11	9	9
Social	17	15	14	12	11	12	12	11	10	9	8	8	7
---WOMEN---													
Total			24	23	22	23	23	23	22	21	18	18	
Eng			23	19	22	23	22	22	21	18	18	17	
Physical			22	23	23	25	27	28	29	30	28	28	
Envat			24	23	24	27	30	32	30	28	24	24	
Phy Total			22	23	23	26	27	30	29	29	26	26	
Math													
Comp													
M/C Total			6	6	5	5	6	7	6	6	5	5	
Agri			17	17	16	17	17	16	18	18	16	15	
Biology			29	29	27	27	29	29	29	28	27	28	
Health			41	42	42	45	42	41	40	38	32	29	
Life			34	34	33	35	34	34	34	32	29	28	
Psych			24	22	19	18	17	16	15	13	10	9	
Social			15	13	12	11	11	12	11	9	8	7	
---MEN---													
Total	37	34	25	23	23	23	24	25	24	23	21	21	0
Eng	37	36	31	28	29	29	29	30	29	27	25	25	0
Physical			30	30	31	31	33	36	36	37	35	36	0
Envat			32	31	31	31	32	36	34	29	28	27	0
Phy Total	39	36	30	30	31	31	33	36	36	34	33	33	0
Math			11	9	9	10	11	12	12	11	11	10	0
Comp			22	21	19	19	19	22	23	21	22	18	0
M/C Total	20	16	13	11	11	12	12	13	14	13	13	12	0
Agri			22	20	18	18	20	20	19	18	18	16	0
Biology			30	28	28	28	28	31	31	30	29	29	0
Health			33	34	29	29	31	38	34	27	19	20	0
Life	46	42	29	27	26	26	27	30	29	27	25	25	0
Psych	51	45	23	21	19	19	21	17	16	14	11	10	0
Social	24	20	14	11	11	12	12	11	10	9	7	8	0

PERCENT OF ALL FEDERAL SUPPORT TO GRADUATE STUDENTS IN PhD DEPARTMENTS

---WOMEN---

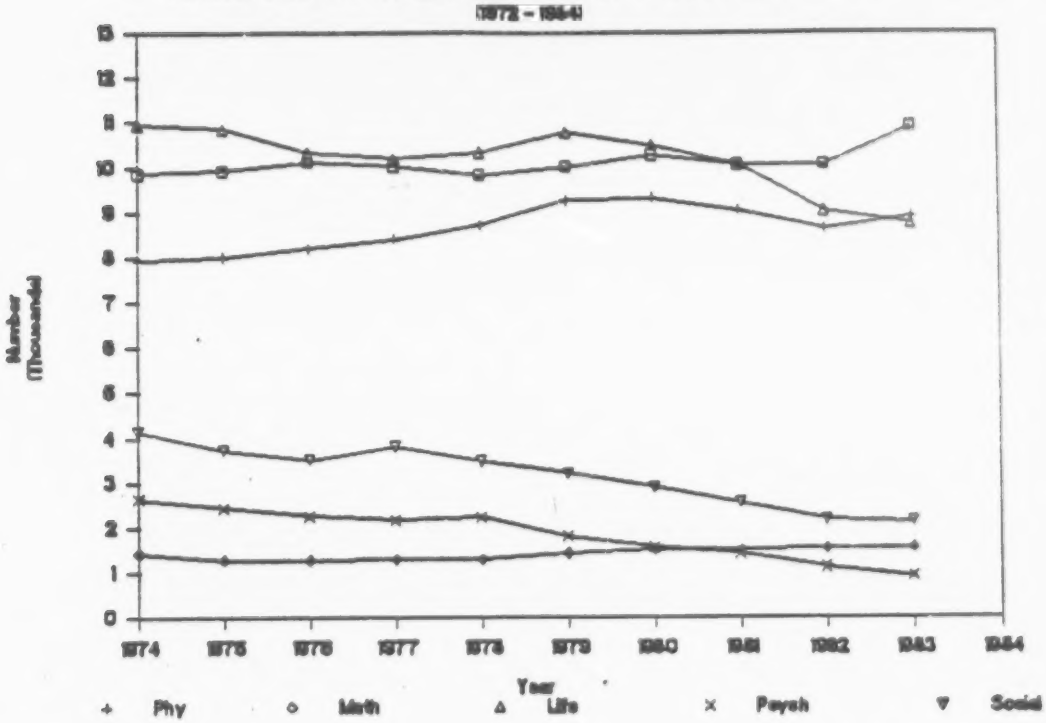
Field	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
Total			6	6	6	7	7	7	7	7	6	6	
Eng			1	1	1	1	2	2	2	2	2	2	
Physical			3	3	3	3	4	4	5	5	5	5	
Envat			3	3	4	5	6	7	7	7	6	6	
Phy Total			3	3	3	4	4	5	5	6	5	5	
Math													
Comp													
M/C Total			1	1	1	1	1	1	1	1	1	1	
Agri			2	2	3	3	3	4	4	4	4	4	
Biology			8	8	8	9	10	10	11	11	11	11	
Health			20	22	24	28	28	27	27	26	22	20	
Life			11	11	12	14	14	15	15	15	13	13	
Psych			9	9	8	8	8	8	8	7	5	5	
Social			5	4	4	4	5	5	5	4	3	3	

---MEN---

Field	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
Total			19	17	17	17	17	16	16	15	14	14	0
Eng			29	27	28	27	27	25	24	22	21	20	0
Physical			26	26	27	27	28	30	30	30	28	28	0
Envat			28	26	26	26	26	27	26	22	20	19	0
Phy Total			27	26	26	26	28	29	29	27	25	25	0
Math			9	7	7	8	8	9	9	8	8	7	
Comp			19	18	16	16	16	15	15	15	12	11	0
M/C Total			10	9	9	9	9	10	10	9	9	8	0
Agri			19	17	15	15	16	15	14	14	13	12	0
Biology			22	20	19	19	19	20	19	19	18	18	0
Health			17	15	12	11	11	11	10	9	7	7	0
Life			20	18	17	16	16	16	15	15	14	13	0
Psych			14	12	11	10	11	9	7	7	5	4	0
Social			9	8	7	8	7	6	6	5	4	4	0

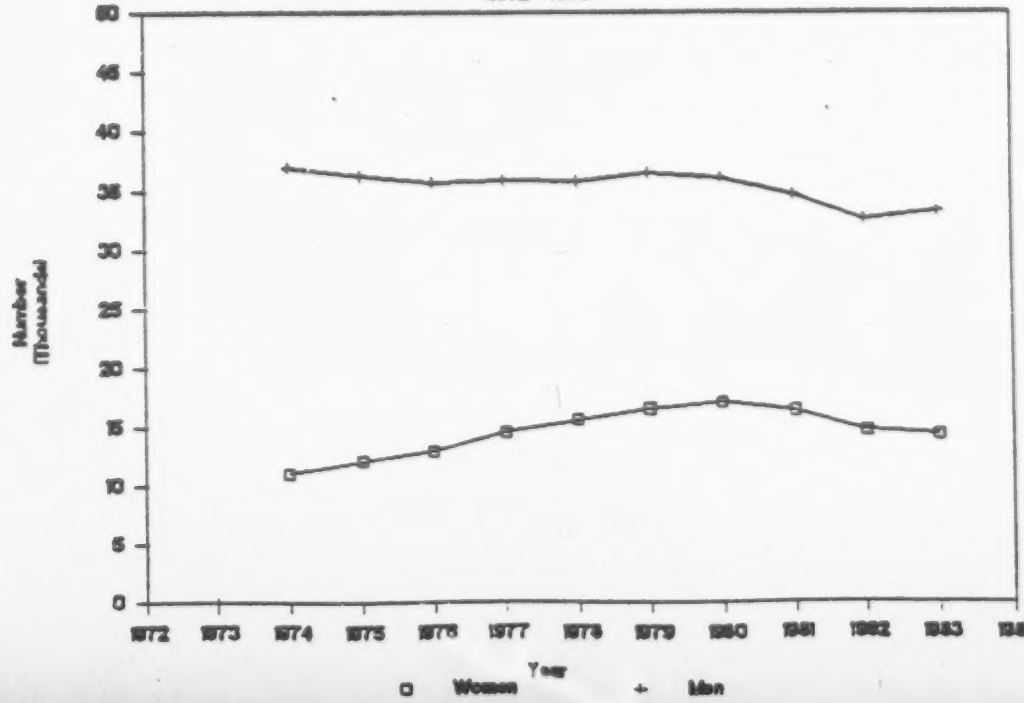
NUMBER OF MEN WITH SUPPORT BY FIELD

(1972 – 1984)



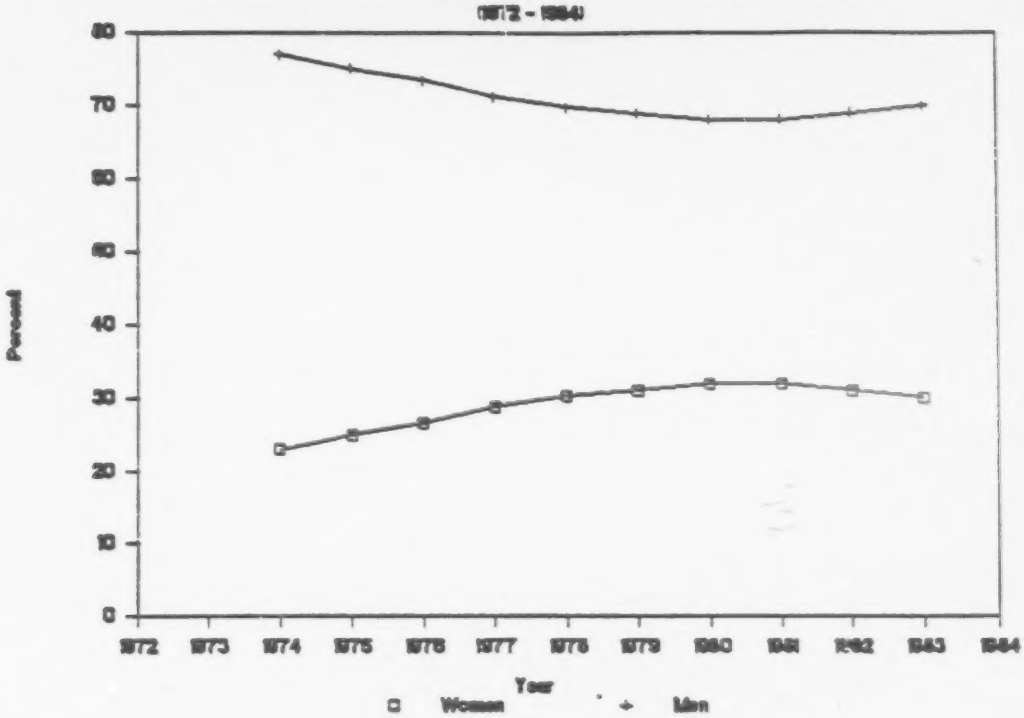
MEN & WOMEN WITH FEDERAL SUPPORT

(1972 – 1984)



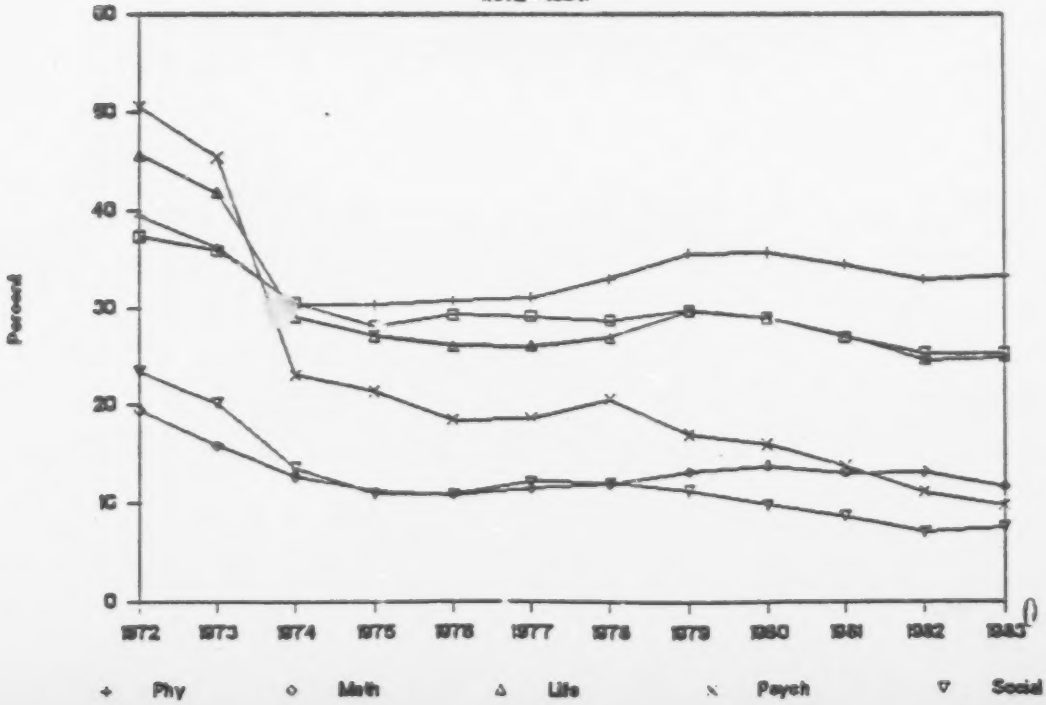
PERCENT OF FEDERAL SUPPORT BY SEX

(1972 - 1984)



% OF MEN WITH FED. SUPPORT BY FIELD

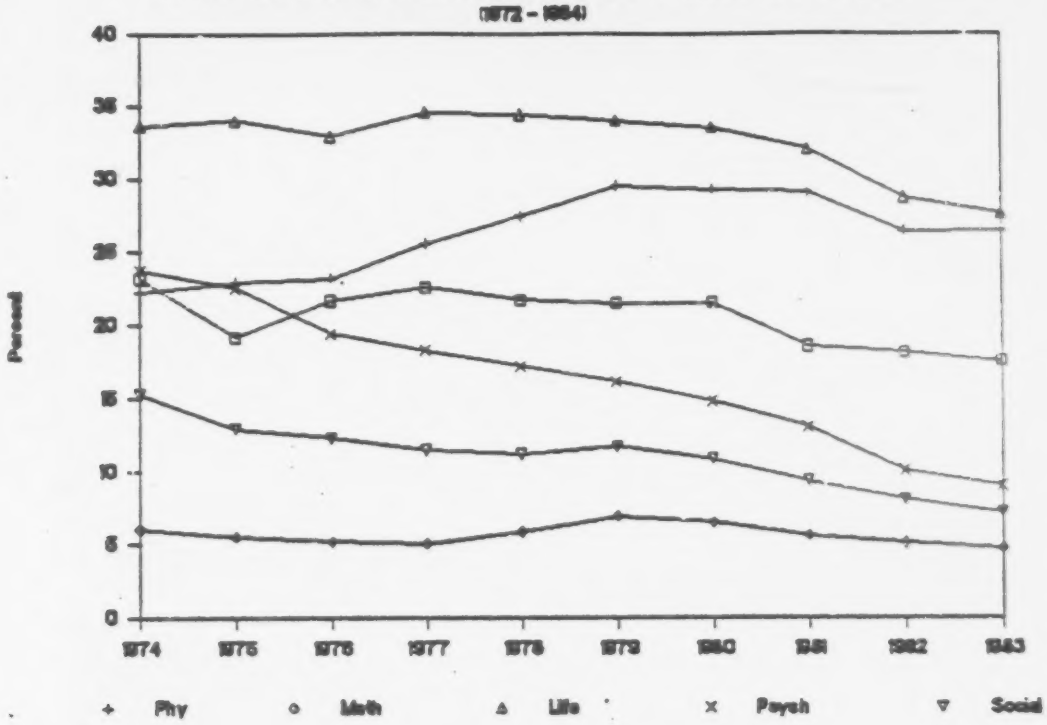
(1972 - 1984)



00013

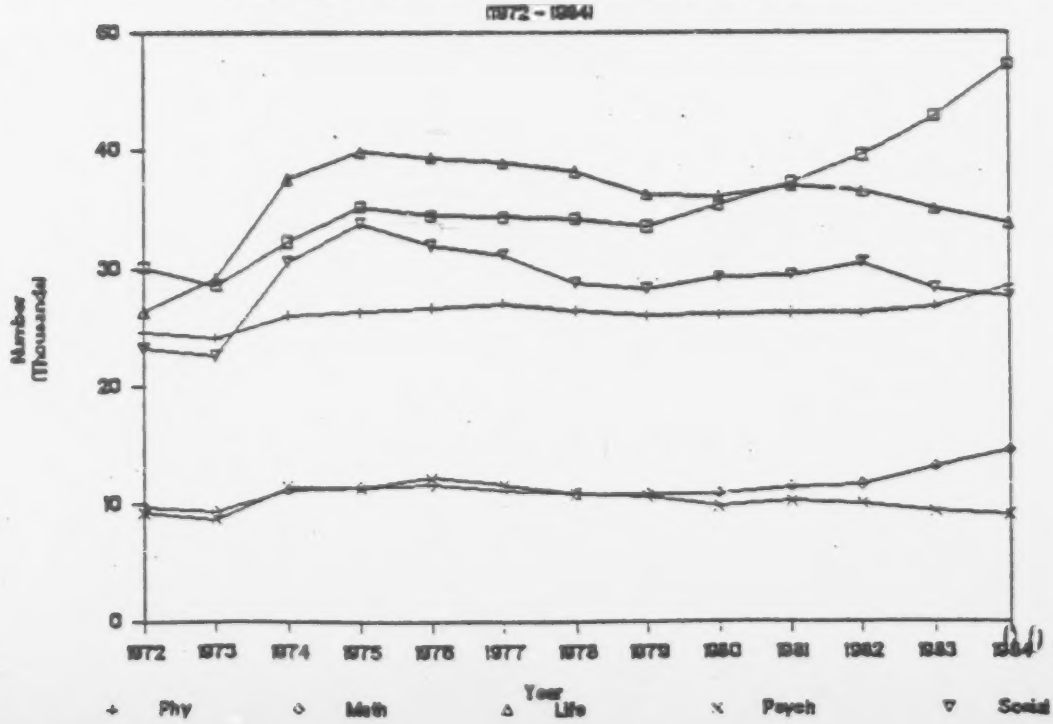
% OF WOMEN WITH FED. SUPPORT BY FIELD

(1972 - 1984)



NUMBER OF MEN ENROLLED BY FIELD

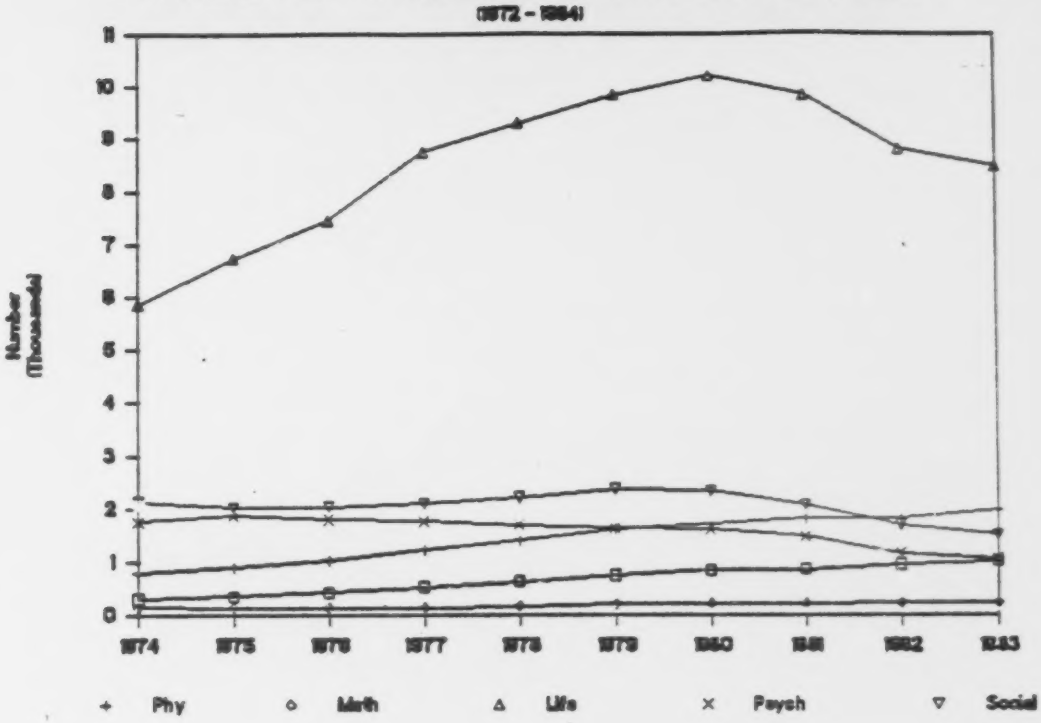
(1972 - 1984)



000139

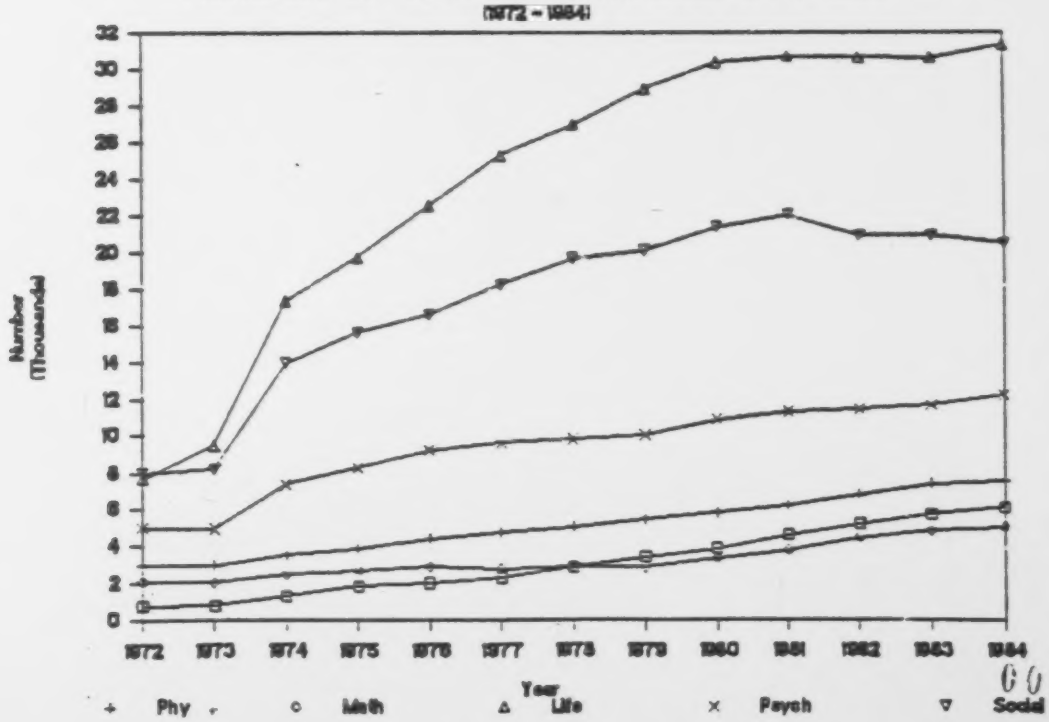
NUMBER OF WOMEN WITH SUPPORT BY FIELD

(1972 - 1984)



NUMBER OF WOMEN ENROLLED BY FIELD

(1972 - 1984)



ENROLLMENT OF FULL TIME SCIENCE AND ENGINEERING GRADUATE STUDENTS IN PH.D. DEPARTMENTS BY FIELD AND CITIZENSHIP

1965-1984

60.41

ENROLLMENT OF FULL-TIME SCIENCE & ENGINEERING GRADUATE STUDENTS IN PhD DEPARTMENTS BY CITIZENSHIP

TOTAL ENROLLMENT

Field	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
Total	94867	118273	128043	138283	141199	145970	142169	149937	151609	195455	210307	214082	217453	216608	223409	230535	234196	236939	243596	246848
Eng	25537	26816	29751	30366	30820	31491	30902	30908	29448	33635	37105	36489	36675	37057	39344	41939	44817	48687	53475	54751
Physical										21255	21317	21623	21747	21497	21757	22254	22600	23330	26492	25149
Envat										8381	8919	9439	10019	9997	10171	10265	10491	10873	11466	11283
Phy Total	25943	28800	29929	30916	30175	29522	28209	27544	27173	29636	30236	31062	31766	31494	31968	32519	33091	34203	35958	36432
Math										10003	10038	10156	9814	9296	9136	9368	9680	10174	10312	10591
Comp										3736	4114	4379	4196	4426	5073	5900	6465	7908	9308	10117
M/C Total	9339	10826	11181	11700	11727	12155	11816	11909	11495	13739	14152	14535	14010	13722	14209	15268	16145	18052	19620	20708
Agri										7614	8507	9042	9296	9259	9371	9591	9630	9500	9397	9327
Biolog										32175	34541	35231	36228	35974	35837	35817	35454	35226	35187	35980
Health										15241	16587	17744	18779	19982	21263	22303	22111	20727	20582	20914
Life Tot	12326	20006	23447	26597	27588	29668	28888	34083	38704	55030	59635	62017	64303	65215	66471	67711	67195	65653	65166	66221
Psych	6356	9516	9903	11317	11918	12656	12781	14282	13760	18866	19672	21406	21266	20711	20737	21580	21544	21103	21322	21603
Social	15668	22309	23832	27387	28971	30478	29573	31211	30912	44549	49507	48573	49433	48409	50680	51518	51402	49211	48055	47133

U.S. CITIZEN ENROLLMENT

Total	81789	98372	106499	113395	113167	116206	113420	121026	122562	163768	177457	179346	180597	179628	178659	181864	181596	181637	183698	185783
Eng	18744	19721	21831	20370	19904	20118	19885	20167	19189	22636	25685	24363	23346	23240	23133	24436	25616	27875	31102	32009
Physical											16891	17173	17174	16898	16621	16668	16523	17038	18451	17810
Envat											7564	7960	8936	8933	8930	8935	9026	9269	8805	9756
Phy Total	22129	24532	25382	26545	24446	23601	22492	22073	21818	24344	24455	25133	26110	25831	25551	25598	25549	26307	27256	27566
Math													7433	6885	6337	6213	6159	6453	6232	6295
Comp													3189	3361	3532	4030	4260	5137	5763	6118
M/C Total	8106	9437	9640	9775	9593	9844	9451	9638	9207	11112	10914	10949	10622	10246	9869	10243	10419	11590	11995	12613
Agri																				
Biolog																				
Health																				
Life Tot	10475	16929	20015	22750	23326	24956	24487	28871	33112	48519	52927	54885	57447	57870	58292	59226	58186	56343	55205	56074
Psych	5820	9163	9527	10670	11404	12155	12250	13800	13091	18325	19043	20833	20644	20207	19769	20526	20712	20216	20416	20683
Social	12691	18590	20104	23285	24496	25532	24855	26477	26039	38832	44433	43183	42428	42237	42045	41835	41114	39306	37726	37038

Notes: Field data for 1965 are limited to matched departments. 1978 data are interpolated.

00012

FOREIGN ENROLLMENT OF FULL-TIME SCIENCE & ENGINEERING STUDENTS IN PhD DEPARTMENTS

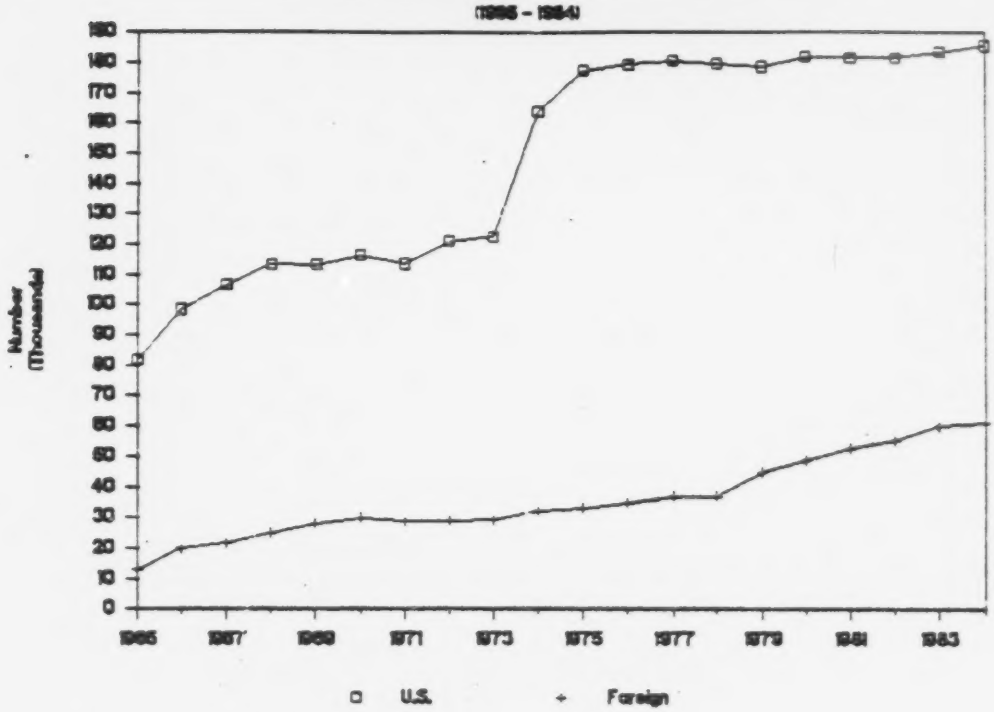
	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
Total	13078	19901	21544	24888	28032	29764	28749	28911	29047	31687	32850	34736	36856	36980	44750	48671	52598	55302	59898	61065
Eng	6793	7095	7920	9996	10916	11373	11017	10741	10259	10999	11420	12126	13329	13818	16211	17503	19201	20812	22373	22742
Physical											4426	4450	4573	4600	5176	5586	6077	6292	6041	7339
Envnt											1355	1479	1083	1064	1241	1335	1445	1604	2661	1527
Phy Total	3814	4268	4547	4371	5729	5921	5717	5471	5355	5292	5781	5929	5656	5664	6417	6921	7542	7896	8702	8866
Math													2381	2411	2799	3155	3521	3721	4080	4296
Comp													1007	1044	1541	1870	2205	2771	3545	3999
N/C Total	1233	1389	1541	1925	2134	2311	2365	2271	2288	2427	3238	3586	3388	3477	4340	5025	5726	6492	7625	8295
Agri																				
Biolog																				
Health																				
Life Tot	1849	3077	3432	3847	4262	4712	4401	5212	5592	6511	6708	7132	6856	7346	8179	8485	9009	9310	9961	10147
Psych	236	353	376	447	514	501	531	482	469	541	629	573	622	505	968	1054	832	887	906	920
Social	2977	3719	3728	4102	4477	4946	4718	4734	4873	5717	5074	5390	7005	6173	8635	9683	10288	9905	10331	10095

% FOREIGN ENROLLMENT

Total	14	17	17	18	20	20	20	19	19	16	16	16	17	17	20	21	22	23	25	25
Eng	27	26	27	33	35	36	36	35	35	33	31	33	36	37	41	42	43	43	42	42
Physical											21	21	21	21	24	25	27	27	25	29
Envnt											15	16	11	11	12	13	14	15	23	14
Phy Total	15	15	15	14	19	20	20	20	20	18	19	19	18	18	20	21	23	23	24	24
Math													24	26	31	34	36	37	40	41
Comp													24	24	30	32	34	35	38	40
N/C Total	13	13	14	16	18	19	20	19	20	19	23	25	24	25	31	33	35	36	39	40
Agri																				
Biolog																				
Health																				
Life Tot	15	15	15	14	15	16	15	15	14	12	11	12	11	11	12	13	13	14	15	15
Psych	4	4	4	6	4	4	4	3	5	3	3	3	3	2	5	5	4	4	4	4
Social	19	17	16	15	15	16	16	15	16	13	10	11	14	13	17	19	20	20	21	21

ENROLLMENT BY CITIZENSHIP

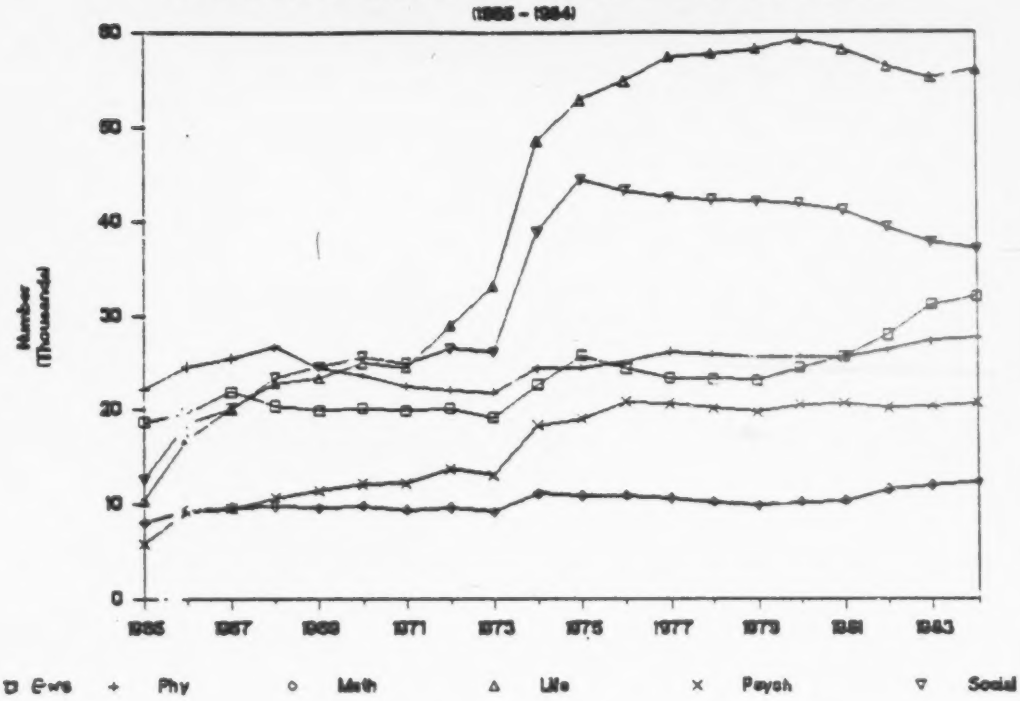
(1966 - 1984)



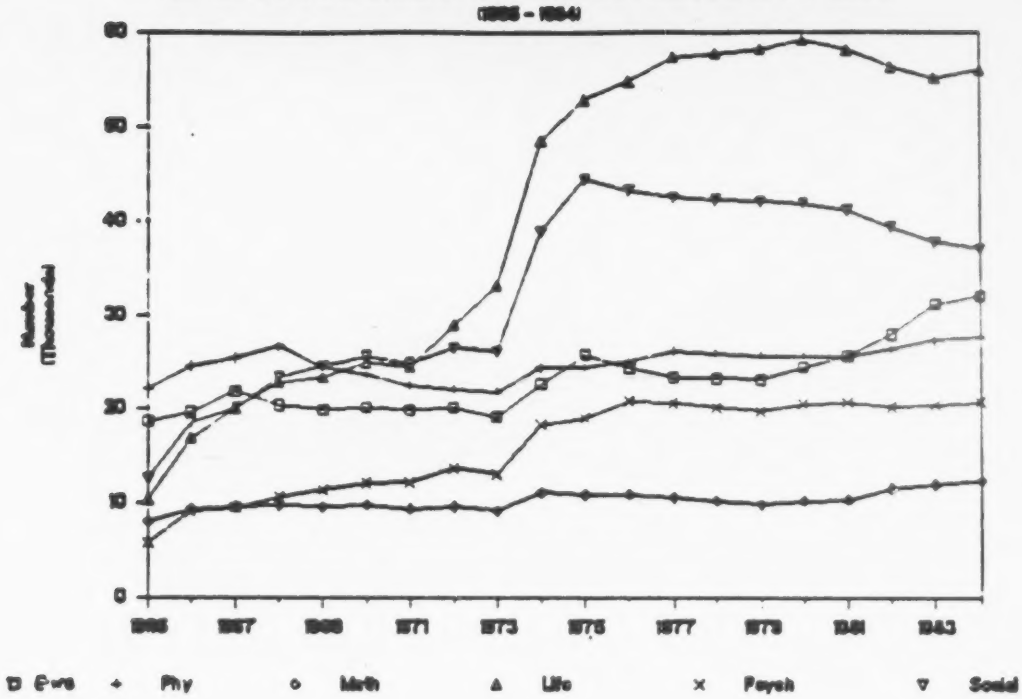
60 of 44

S/E ENROLLMENT OF US CITIZENS BY FIELD

(1965 - 1984)

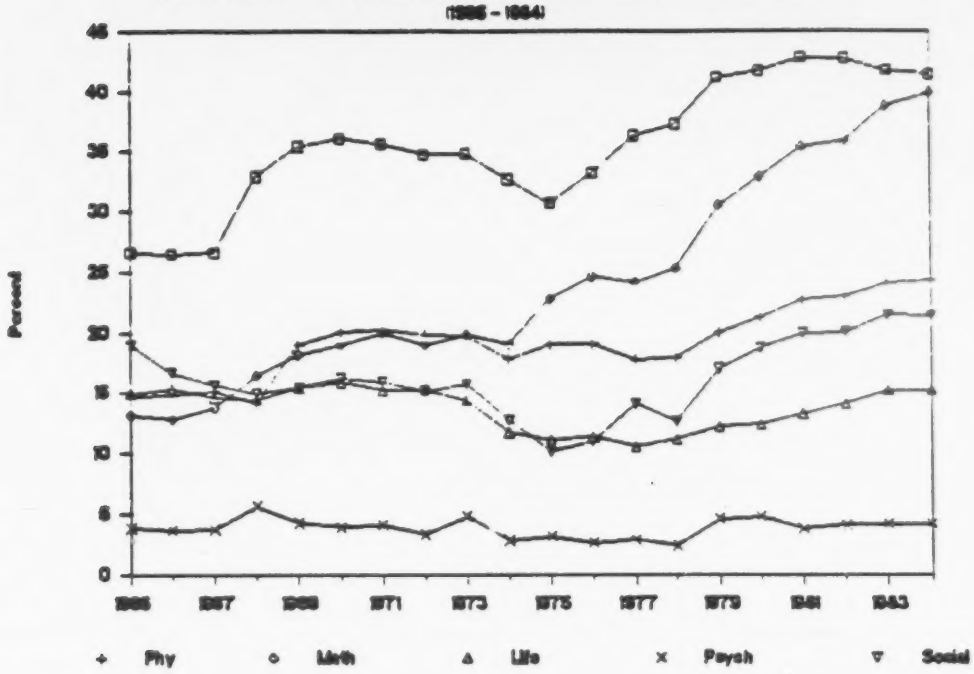


S/E ENROLLMENT OF US CITIZENS BY FIELD



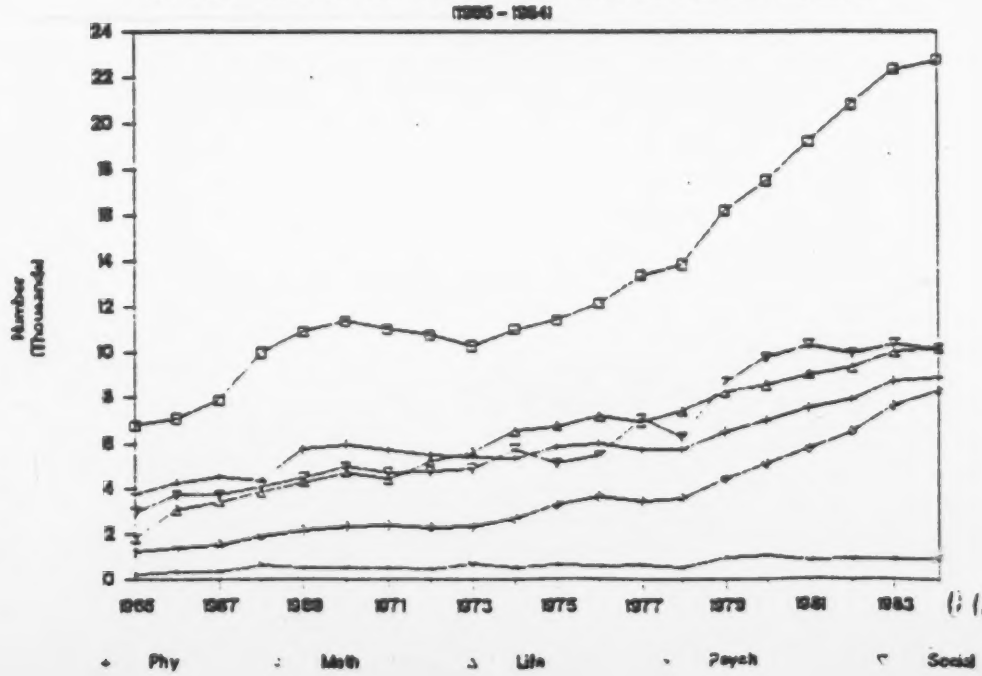
PERCENT FOREIGN ENROLLMENT BY FIELD

(1965 - 1984)



ENROLLMENT OF FOREIGN CITIZENS BY FIELD

(1965 - 1984)



TYPE OF SUPPORT OF FULL TIME SCIENCE AND ENGINEERING GRADUATE STUDENTS IN PH.D. DEPARTMENTS

1965-1984

TYPE OF FEDERAL SUPPORT

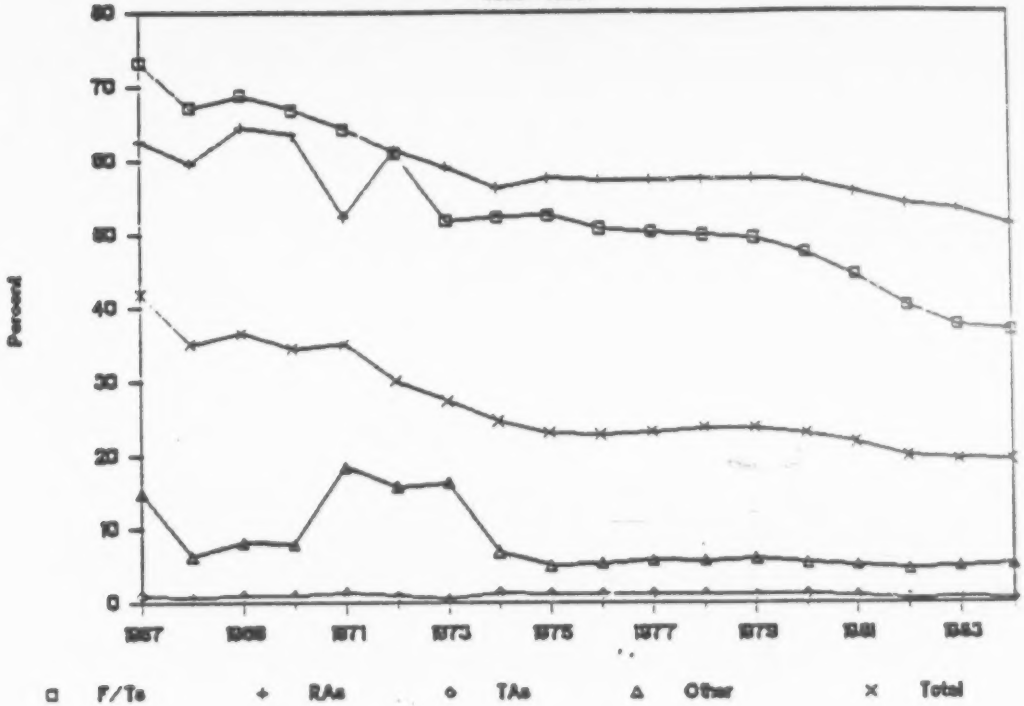
1967-1984

TYPE OF SUPPORT OF FULL-TIME SCIENCE & ENGINEERING GRADUATE STUDENTS IN PhD DEPARTMENTS

Field\Year	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
TYPE OF SUPPORT																				
Total Enrollment	94867	118273	128043	138283	161199	145970	142169	149937	151609	195455	210307	214082	217453	216608	223409	230535	234194	236939	243596	246848
Fellow/Traineeships	27853	34831	41694	41714	41734	40416	36103	28728	26190	38498	38812	37486	39204	39138	39071	38901	37653	35979	35407	35695
Research Associates	21043	26252	29581	30026	30471	31211	36140	29637	30232	39601	40136	42717	43896	46156	48416	50781	51946	51828	54162	57039
Teaching Assistants	21923	26555	28530	30761	32991	35594	29668	34557	35721	46192	47348	48312	48665	49111	49556	51838	53800	56068	57884	59180
Other Support	24048	28635	28238	35783	36003	38749	40258	57015	59466	71164	84011	85567	85688	82204	86366	89015	90795	93064	96143	94934
FEDERAL SUPPORT																				
Total Support		44617	53518	48402	51620	50256	49916	45029	41336	47989	48249	48593	50378	51269	52871	52939	50897	47206	47445	47764
Fellow/Traineeships			30523	27995	28707	26987	23182	17533	13586	20137	20370	19018	19686	19498	19310	18442	16744	16484	13315	13181
Research Associates			18494	17917	19646	19812	18902	18225	17872	22307	23104	24460	25155	26498	27841	29066	28948	28025	28891	29253
Teaching Assistants			310	220	327	369	431	305	193	634	555	572	606	578	549	683	549	382	469	383
Other Support			4191	2270	2940	3088	7401	8966	9685	4911	4220	4543	4931	4696	5171	4828	4664	4315	4770	4947
PERCENT WITH MAJOR TYPES OF SUPPORT																				
Fellow/Traineeships			35	30	30	28	25	19	17	20	18	18	18	18	17	17	16	15	15	14
Research Associates			23	22	22	21	25	20	20	20	19	20	20	21	22	22	22	22	22	23
Teaching Assistants			22	22	23	24	21	23	24	24	23	23	22	23	22	22	23	24	24	24
Other Support			22	26	25	27	28	38	39	36	40	40	39	38	39	39	39	39	39	38
PERCENT WITH FEDERAL SUPPORT BY TYPE OF SUPPORT																				
Total Support			42	35	37	34	35	30	27	25	23	23	23	24	24	23	22	20	19	19
Fellow/Traineeships			73	67	69	67	64	61	52	52	52	51	50	50	49	47	44	40	38	37
Research Associates			63	60	64	63	52	61	59	56	58	57	57	57	58	57	56	54	53	51
Teaching Assistants			1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Other Support			15	6	8	8	18	16	16	7	5	5	6	6	6	5	5	5	5	5
TYPE OF FEDERAL SUPPORT																				
Fellow/Traineeships			57	58	56	54	46	39	33	42	42	39	39	38	37	35	33	31	28	28
Research Associates			35	37	38	39	38	40	43	46	48	50	50	52	53	55	57	59	61	61
Teaching Assistants			1	0	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1
Other Support			8	5	6	6	15	20	23	10	9	9	10	9	10	9	9	9	10	10

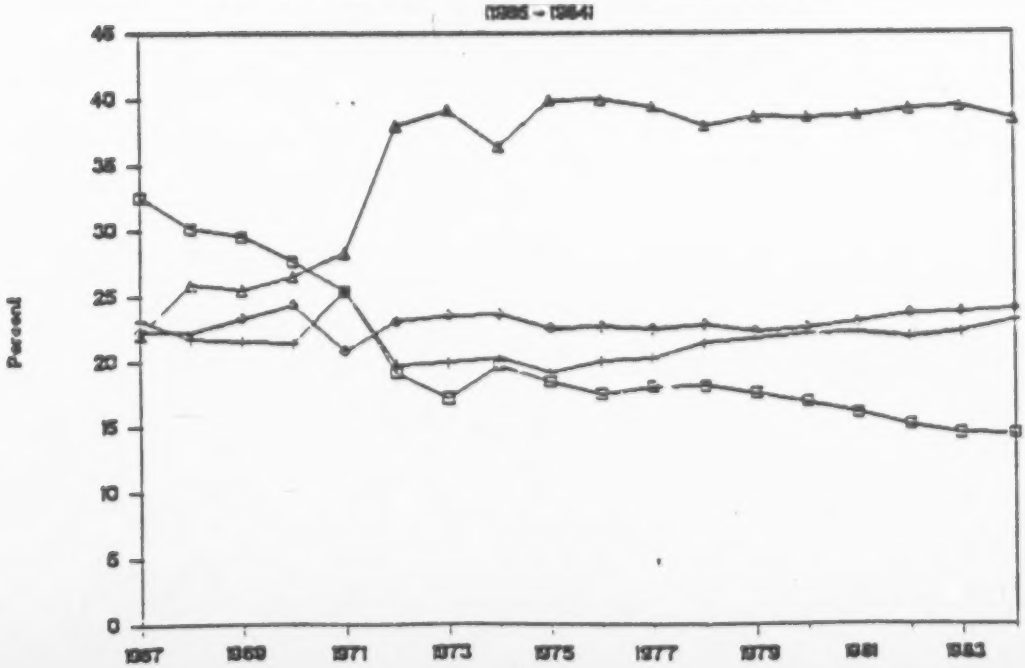
PERCENT WITH FEDERAL SUPPORT

(1966 - 1984)



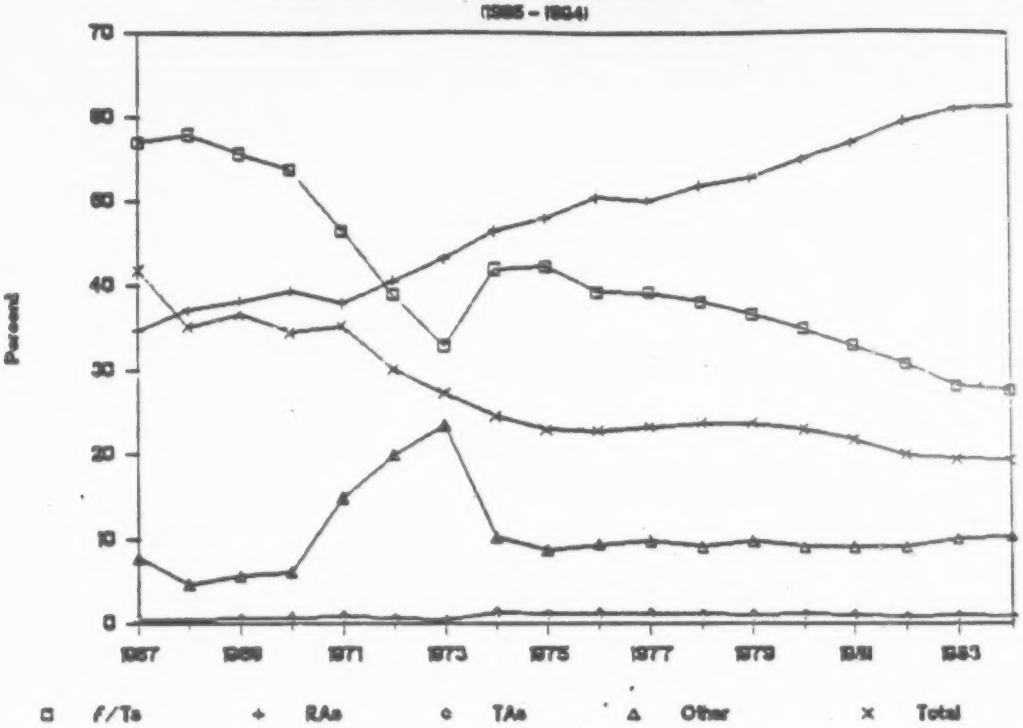
TYPE OF SUPPORT - PERCENT

(1966 - 1984)



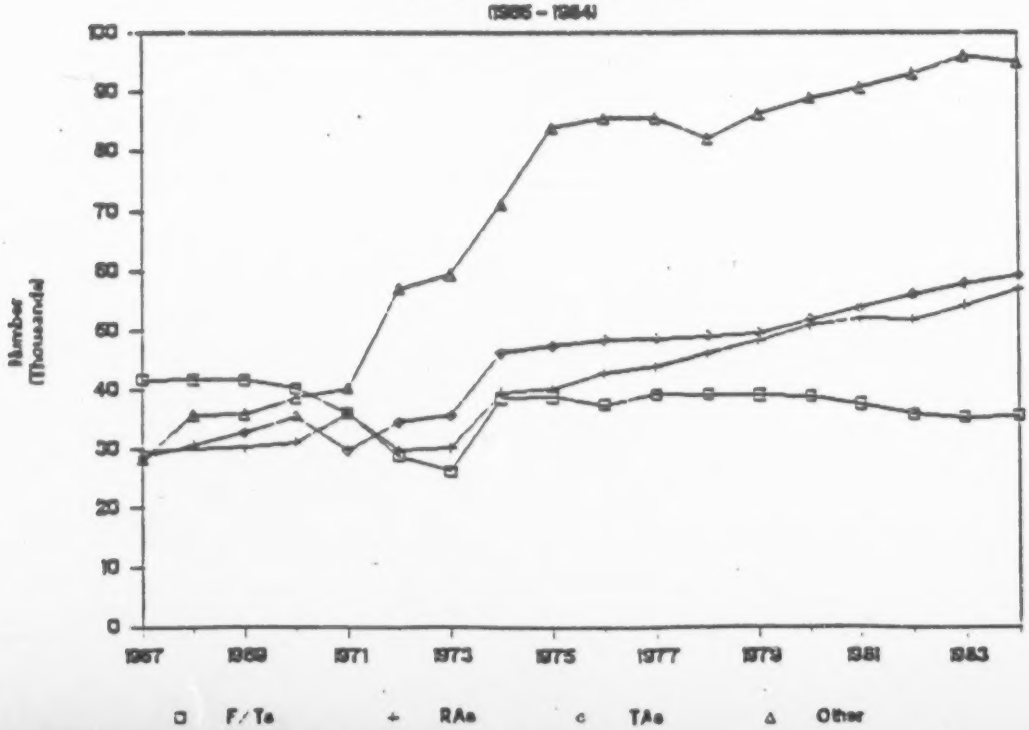
PERCENT OF FEDERAL SUPPORT

(1965 – 1984)

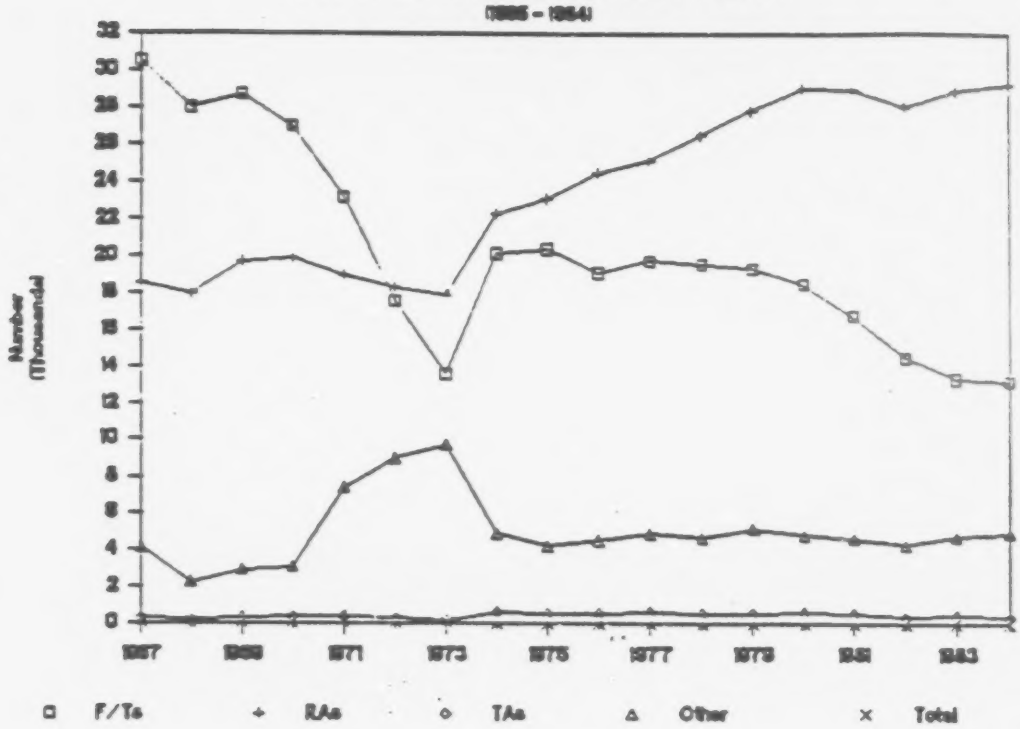


TYPE OF SUPPORT

(1965 – 1984)



TYPE OF FEDERAL SUPPORT



SOURCE AND TYPE OF SUPPORT FOR FOREIGN S/E GRADUATE STUDENTS

FEDERAL SUPPORT 1966-1973

FOREIGN SUPPORT 1966-1984

60052

SUPPORT OF FOREIGN GRADUATE STUDENTS IN SCIENCE & ENGINEERING

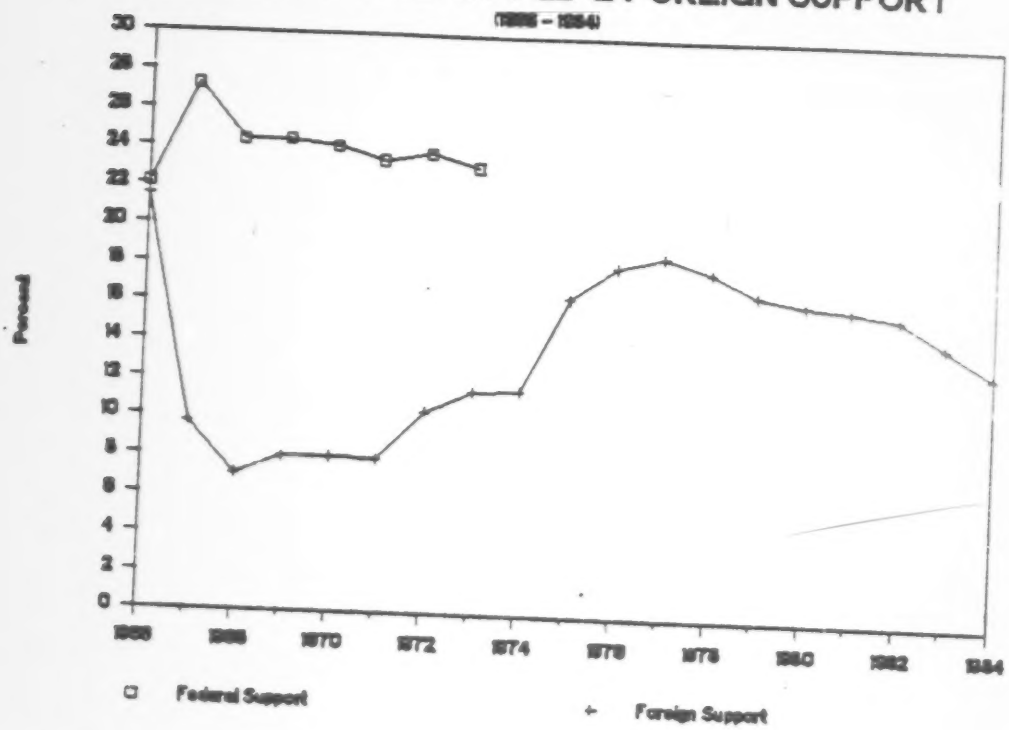
YEAR	NO. OF FOREIGN	NO. w FEDERAL SUPPORT	NO. w FOREIGN SUPPORT	% w FED SUPPORT	% w FOR SUPPORT
1965	13078				
1966	19901	4401	4276	22.1	21.5
1967	21544	5877	2092	27.3	9.7
1968	24888	6082	1762	24.4	7.1
1969	28032	6360	2245	24.5	8.0
1970	29764	7190	2390	24.2	8.0
1971	28749	6748	2288	23.5	8.0
1972	28911	6906	3011	23.9	10.4
1973	29047	6736	3350	23.2	11.5
1974	31687		3674		11.6
1975	32850		5422		16.5
1976	34736		6319		18.2
1977	36856		6906		18.7
1978	36980				18.0
1979	44750		7546		16.9
1980	48671		8003		16.4
1981	52598		8550		16.3
1982	55302		8767		15.9
1983	59898		8698		14.5
1984	61065		7968		13.0

Note: 1987 percentage for students with foreign support is interpolated.

TYPE OF SUPPORT

	TOTAL FOREIGN				FEDERAL FOREIGN			
	TOTAL	FELLOW TRAINEE	RA	TA	TOTAL	FELLOW TRAINEE	RA	TA
1965		3249	4845	3159				
1966		4140	6129	4056				
1967		4466	7292	4671	5613	734	4818	61
1968		4727	7792	5549	5839	724	5065	50
1969		5272	9005	6506	6344	693	5571	80
1970		3678	7520	5171	5911	855	5960	96
1971		5068	8355	6630	6492	855	5560	77
1972		3113	7045	4989	6438	127	5537	74
1973		5283	8503	6644	6345	969	5323	53

% FOREIGN STUD W/FED & FOREIGN SUPPORT



SOURCE OF SUPPORT OF FULL TIME S/E GRADUATE STUDENTS IN

Ph.D. DEPARTMENTS, BY SEX,

1972-84

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SOURCE OF SUPPORT OF FULL-TIME SCIENCE & ENGINEERING GRADUATE STUDENTS IN PhD DEPARTMENTS BY SEX

---TOTAL---

	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
Total	149937	151609	195455	210307	214082	217453	216608	223409	230535	234194	236939	243596	246848
Women	26592	28704	46278	52222	57830	63150	67000	71075	75930	78901	79743	81449	82951
Men	123345	122905	149177	158085	156252	154303	149608	145533	147479	151634	154451	155490	160645

Note: 1978 Women and Men estimated.

---FEDERAL SUPPORT---

Total	45029	41336	47989	48249	48593	50378	51269	52871	52939	50897	47206	47445	47764
Women	7296	6850	11016	12012	12896	14495	15500	16403	16925	16261	14647	14291	14785
Men	37733	34486	36973	36237	35697	35883	35769	36468	36014	34636	32559	33154	32979

---INSTITUTIONAL SUPPORT---

Total	57884	63159	75223	77083	79217	80404	79727	82813	86715	90261	93244	96124	99978
Women	10374	12371	16914	18294	19944	21582	21215	24612	26693	28721	30710	31976	33136
Men	47510	50788	58309	58789	59273	58822	58512	58201	60022	61540	62534	64148	66842

---SELF SUPPORT---

Total	34597	34109	55867	68123	68593	68442	66347	67686	69815	70654	72859	75596	74547
Women	7240	7634	15798	19031	22008	23623	24675	25726	27628	29070	29472	29481	29153
Men	27357	26475	40069	49092	46585	44819	41672	41960	42187	41584	43387	46115	45394

---OTHER SUPPORT---

	12427	13005	16376	16852	17679	18229	19265	20039	21066	22332	23630	24431	24559
Women	1682	1849	2550	2885	2982	3450	5610	4334	4684	4849	4914	5701	5877
Men	10745	11156	13826	13967	14697	14779	13655	8904	9256	13874	15971	12073	15430

Note: Data for Institutional, Self, and Other support for women and men in 1978 are estimated.

PERCENT FEDERAL SUPPORT

Total	30	27	25	23	23	23	24	24	23	22	20	19	19
Women	27	24	24	23	22	23	23	23	22	21	18	18	18
Men	31	28	25	23	23	23	24	25	24	23	21	21	21

PERCENT INSTITUTIONAL SUPPORT

Total	39	42	38	37	37	37	37	37	38	39	39	39	41
Women	39	43	37	35	34	34	32	35	35	36	39	39	40
Men	39	41	39	37	38	38	39	40	41	41	40	41	42

PERCENT SELF SUPPORT

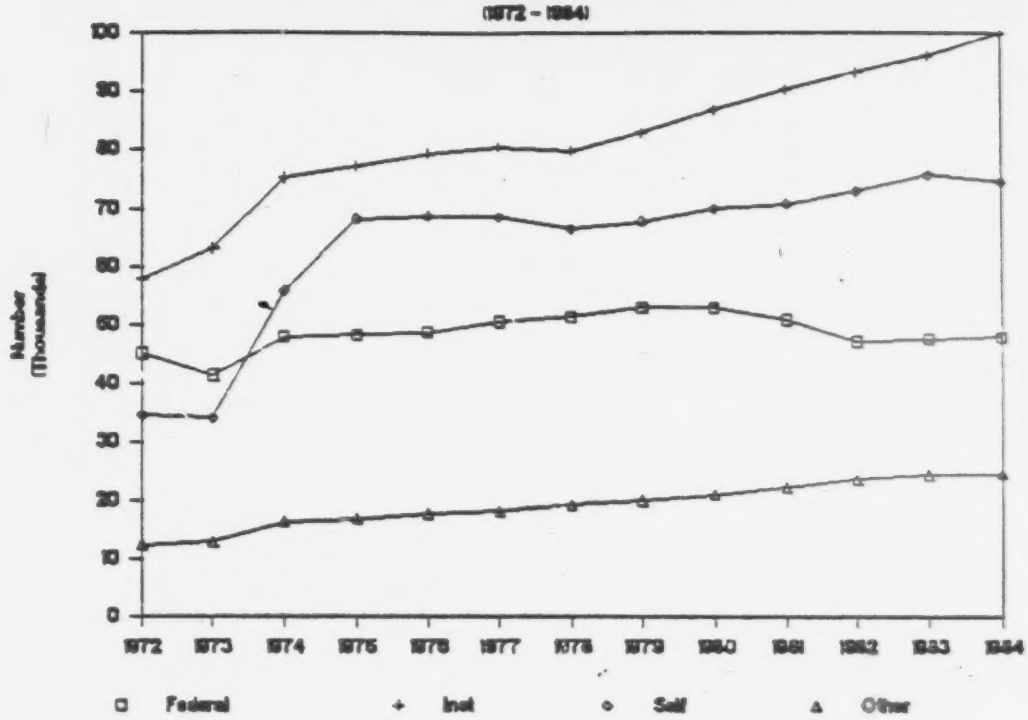
Total	23	22	29	32	32	31	31	30	30	30	31	31	30
Women	27	27	34	36	38	37	37	36	36	37	37	36	35
Men	22	22	27	31	30	29	28	29	29	27	28	30	28

PERCENT OTHER SUPPORT

Total	8	9	8	8	8	8	9	9	9	10	10	10	10
Women	6	6	6	6	5	5	8	6	6	6	6	7	7
Men	9	9	9	9	9	10	9	6	6	9	10	8	10

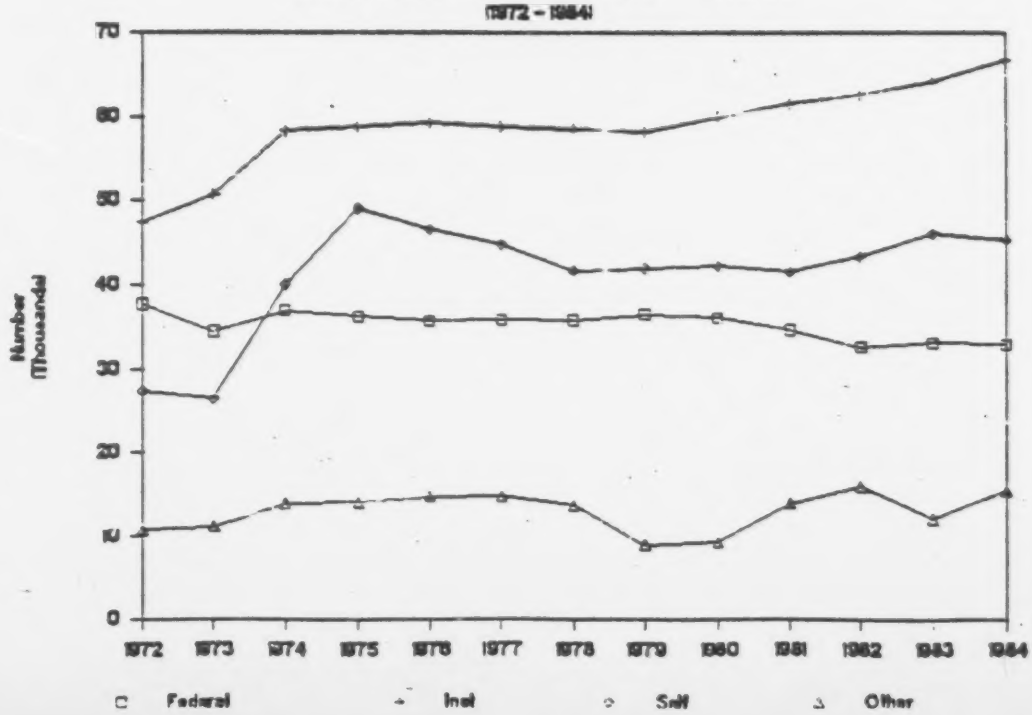
SOURCE OF STUDENT SUPPORT (ALL)

(1972 - 1984)



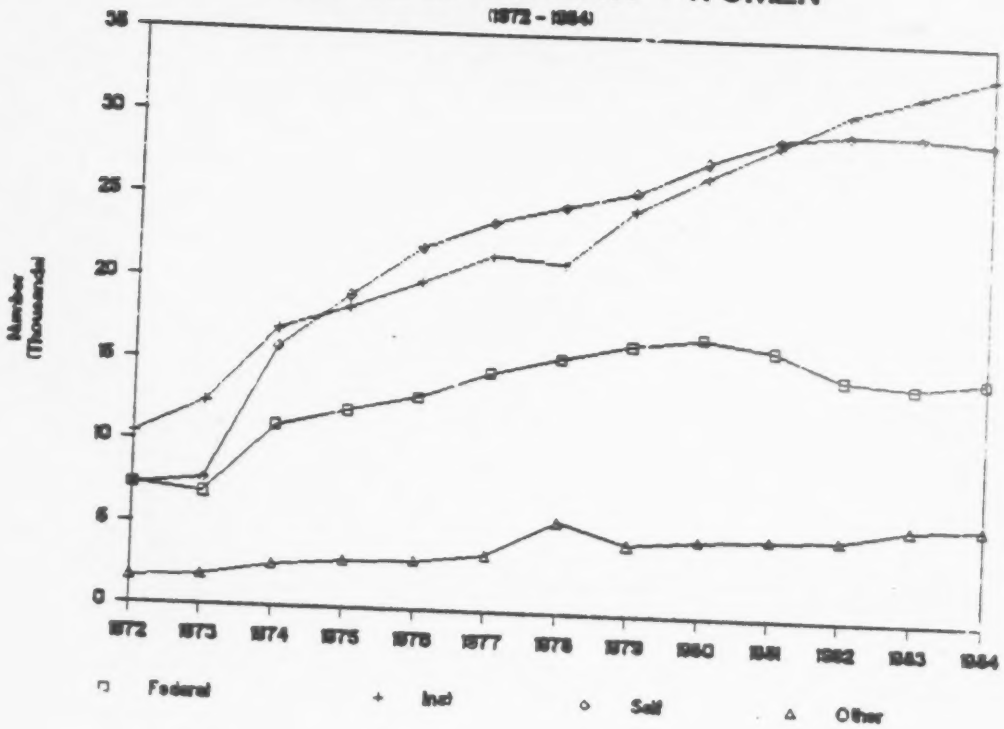
SOURCE OF SUPPORT - MEN

(1972 - 1984)



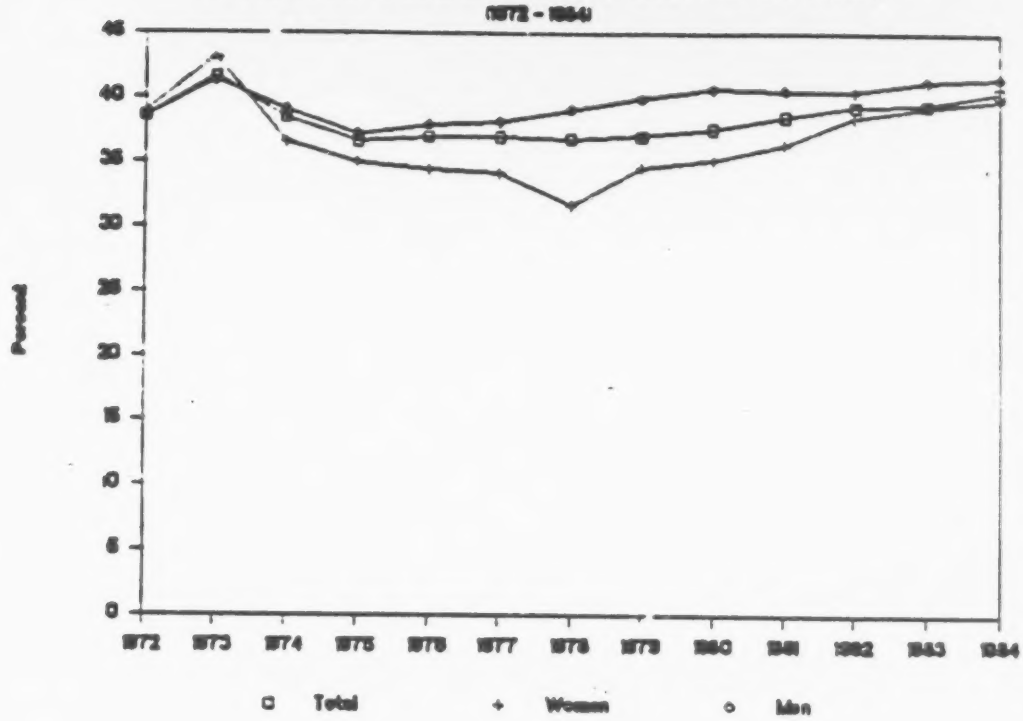
SOURCE OF SUPPORT - WOMEN

(1972 - 1984)



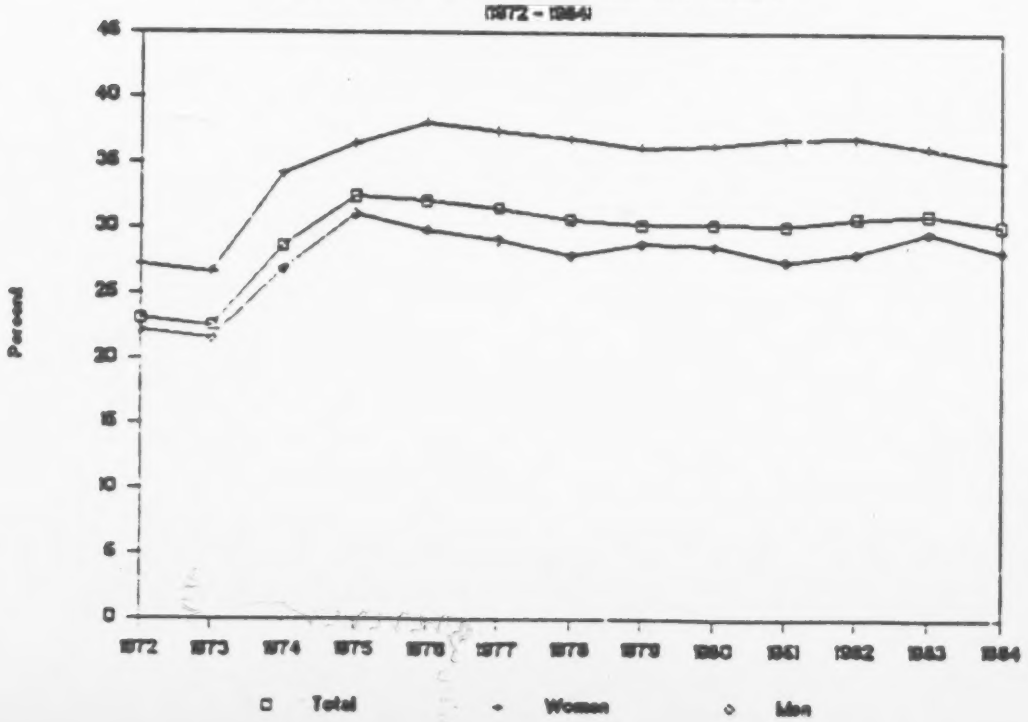
% INSTITUTIONALLY SUPPORTED BY SEX

(1972 - 1984)



% SELF SUPPORTED BY SEX

(1972 - 1984)



Master's Degrees: 1950-1984

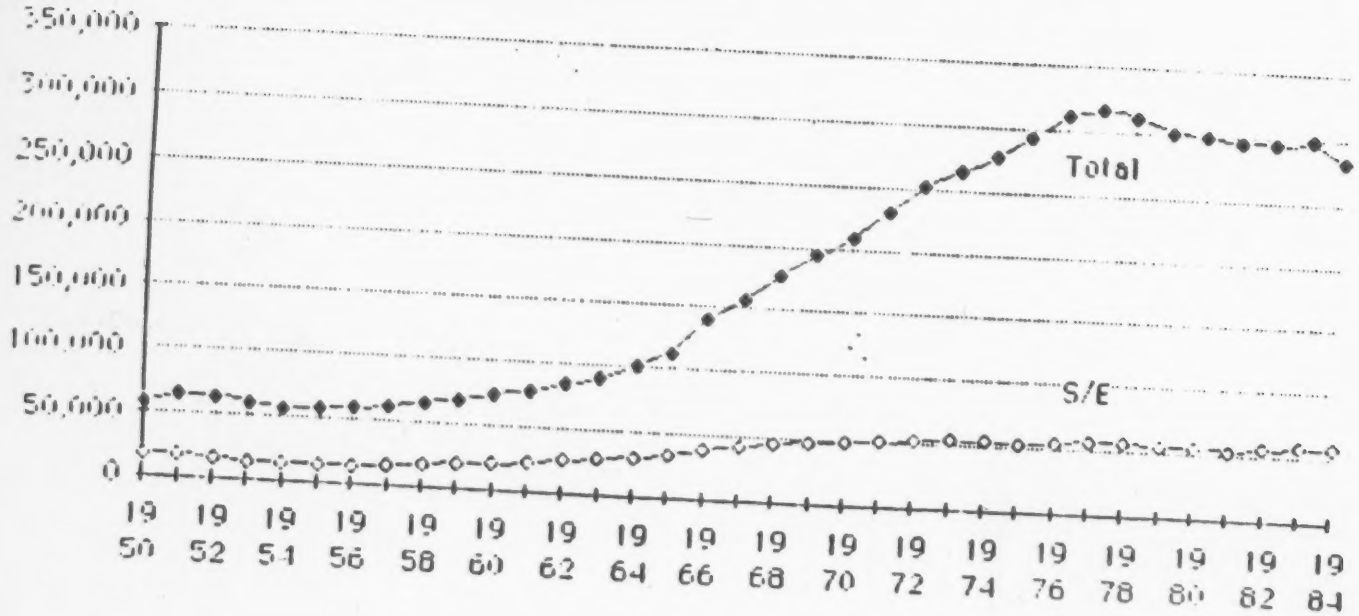
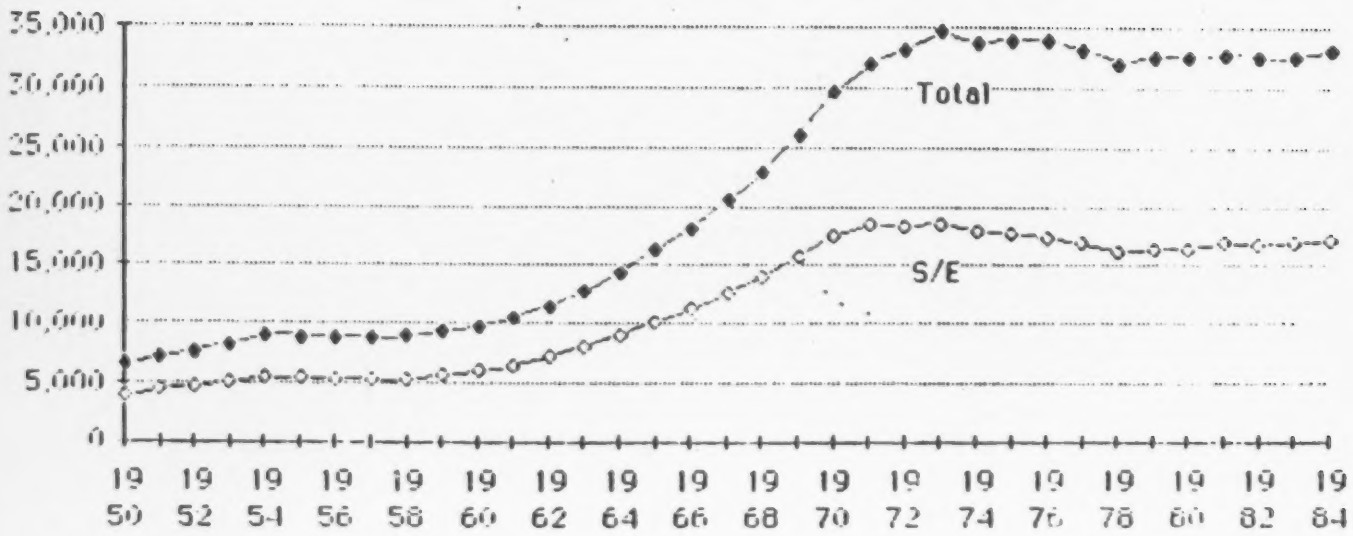


Figure 30

Doctor's Degrees: 1950-1984



FEDERAL SUPPORT OF FULL TIME S/E/ GRADUATE STUDENTS IN PH.D.

DEPARTMENTS BY FEDERAL AGENCY AND FIELD

1969-1984

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FULL-TIME GRADUATE STUDENTS IN DOCTORAL DEPARTMENTS WITH FEDERAL SUPPORT, BY AGENCY

Year	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
Agency								ALL S/E FIELDS								
FED. TOTAL	51620	50256	45101	45029	41336	47989	48249	48593	50378	51269	52871	52939	50897	47206	47445	47764
DOD	4963	5339	4629	4771	4202	5547	5084	4798	4993	4995	4998	5239	5647	5861	6901	7034
HHS TOTAL	20611	18958	17734	17988	15532	20022	20869	20366	21081	21756	22649	19377	18018	16040	15036	15281
NIH	12189	12379	11538	13378	10108	11919	12214	11360	10928	10876	11660	11560	11283	10860	10852	11220
NDEA	6858	4941	4796	3083	1686											
OTHER HH	1564	1638	1400	1527	3738											
OTHER HHS	8422	6579	6196	4610	5424	8103	8655	9006	10153	10880	10989	7817	7635	5180	4184	4061
NSF	12981	13957	11598	10419	9514	8818	8796	8962	9023	9009	9275	9243	9084	9207	9476	9813
USDA	1091	1114	983													
AEC	2940	2758	2054	1784	1546											
NASA	2683	1988	1694	1273	1224											
OTHER FED.	6351	6142	6409	8794	9318	13602	13500	14467	15281	15509	15949	19080	18148	16098	16032	15636
Agency								ENGINEERING								
FED. TOTAL	12334	12201	11137	11246	10273	10178	10280	10565	10013	10451	10009	10264	10065	10055	10902	10444
DOD	2732	2969	2592	3076	2704	2792	2824	2620	2685	2650	2571	2712	3004	3250	3788	3553
HHS TOTAL	2229	1998	1909	1589	1153	884	1025	1049	853	991	901	549	451	419	449	425
NIH	1025	1054	1016	945	679	665	717	686	512	548	446	426	383	338	372	370
NDEA	1053	740	713	414	197											
OTHER HH	151	204	180	230	277											
OTHER HHS	1204	944	893	644	474	219	308	363	341	443	455	123	68	81	77	55
NSF	3055	3272	2710	2693	2540	2494	2575	2569	2382	2337	2256	2241	2187	2365	2448	2434
USDA	61	60	55													
AEC	845	817	553	525	514											
NASA	1308	1038	877	622	555											
OTHER FED.	2104	2047	2441	2743	2807	4008	3856	4327	4093	4473	4281	4762	4423	4021	4217	4032

FULL-TIME GRADUATE STUDENTS IN DOCTORAL DEPARTMENTS WITH FEDERAL SUPPORT, BY AGENCY

Year	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
Agency							PHYSICAL SCIENCES									
FED. TOTAL	13187	12088	11165	9687	8750	8728	8893	9226	9629	10111	10883	11024	10864	10452	10895	11372
DOD	1438	1489	1322	1103	988	1101	955	899	828	850	968	957	1073	1006	1190	1358
HHS TOTAL	3092	2338	2186	1783	1268	1206	1358	1477	1578	1699	1867	1742	1611	1563	1553	1630
NIH	1679	1279	1151	1137	888	1061	1236	1277	1236	1307	1444	1567	1425	1446	1428	1517
NGEA	1353	942	960	598	298											
OTHER HH	60	117	75	48	82											
OTHER HHS	1413	1059	1035	646	380	145	122	200	342	392	423	175	186	117	125	113
NSF	4664	5023	4327	4110	3869	3741	3748	3948	3965	4065	4232	4120	4228	4288	4525	4725
USDA	63	12	27													
AEC	1819	1614	1306	1075	869											
NASA	910	675	621	526	569											
OTHER FED.	1201	937	936	1090	1187	2680	2832	2902	3258	3497	3816	4205	3952	3595	3627	3659
Agency							MATHEMATICAL SCIENCES									
FED. TOTAL	3223	2936	2427	1908	1497	1580	1438	1425	1437	1471	1630	1721	1726	1775	1792	1972
DOD	324	317	302	249	213	662	574	583	516	550	608	622	733	730	746	912
HHS TOTAL	748	541	582	395	240	138	168	151	142	160	141	122	85	85	70	51
NIH	186	162	158	148	115	108	131	131	122	118	102	100	72	67	54	46
NGEA	506	318	370	206	111											
OTHER HH	56	61	54	41	14											
OTHER HHS	562	379	424	247	125	30	37	20	20	42	39	22	13	18	16	5
NSF	1708	1759	1169	961	746	556	498	480	542	537	544	595	603	613	606	709
USDA	13	9	6													
AEC	40	42	53	52	37											
NASA	188	71	51	18	9											
OTHER FED.	202	197	196	233	252	224	198	211	237	224	297	382	305	347	370	300

FULL-TIME GRADUATE STUDENTS IN DOCTORAL DEPARTMENTS WITH FEDERAL SUPPORT, BY AGENCY

Year	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
Agency								LIFE SCIENCES								
FED. TOTAL	11513	11710	12850	12037	12209	16816	17586	17770	18941	19620	20612	20687	19868	17829	17227	1744
DOD	131	151	119	60	109	459	302	301	529	325	306	337	310	321	510	421
HHS TOTAL	7237	7143	6462	8121	8147	11812	12698	12500	13371	13870	14820	13497	12843	11674	11227	11455
NIH	5614	5856	5278	7122	6785	7908	8035	7424	7393	7476	7983	7830	7935	7884	7992	8243
NDEA	1325	1000	935	617	325											
Other HHS	298	287	249	382	1037											
OTHER HHS	1623	1287	1184	999	1362	3904	4663	5076	5978	6394	6837	5667	4908	3790	3235	3212
NSF	1895	2022	1732	1307	1179	1040	1087	1190	1252	1336	1261	1297	1189	1183	1134	1184
USDA	766	857	745													
AEC	223	186	127	131	122											
NASA	183	128	91	76	72											
OTHER FED.	1078	1223	1141	2342	2580	3505	3499	3779	3789	4089	4225	5556	5526	4651	4356	-11316
Agency								PSYCOLOGY								
FED. TOTAL	5127	5127	4977	4691	3982	4408	4307	4057	3936	3936	3438	3189	2895	2283	1980	1942
DOD	178	134	78	81	89	193	133	140	157	150	150	127	139	114	135	133
HHS TOTAL	3580	3577	3425	3391	2803	3257	3122	2912	2825	2908	2481	1872	1633	1300	1004	1024
NIH	2487	2683	2641	2775	1065	1477	1426	1267	1177	1083	1075	1010	898	693	584	629
NDEA	563	432	405	244	188											
Other HHS	530	462	379	372	1550	1780	1696	1645	1648	1825	1406	862	735	607	420	395
OTHER HHS																
NSF	467	523	518	452	371	273	269	211	226	222	254	280	243	206	190	206
USDA	0	0	0													
AEC	1	3	3	1	1											
NASA	52	39	32	13	7											
OTHER FED.	849	851	719	753	781	685	788	743	728	656	553	910	880	663	651	579

FULL-TIME GRADUATE STUDENTS IN DOCTORAL DEPARTMENTS WITH FEDERAL SUPPORT, BY AGENCY

Year	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
Agency							SOCIAL SCIENCES									
FED. TOTAL	6236	6194	6102	5460	4596	6279	5745	5550	5898	5680	5551	5211	4621	3862	3635	3534
DOD	160	279	216	204	99	340	296	255	356	325	314	346	263	271	335	335
HHS TOTAL	3725	3361	3170	2709	1963	2725	2503	2226	2239	2128	2296	1483	1301	917	607	577
NIH	1198	1345	1294	1251	574	700	669	575	447	344	543	546	507	367	317	319
NDEA	2058	1509	1413	1004	636											
Other HHS	469	507	463	454	753	2025.	1834	1651	1792	1794	1753	937	794	550	290	258
OTHER HHS																
NSF	1192	1358	1142	896	809	714	619	564	534	512	532	544	455	350	345	305
USDA	188	176	150													
AEC	12	96	12	0	3											
NASA	42	37	22	18	12											
OTHER FED.	917	887	976	1633	1710	2500	2327	2505	2769	2715	2409	2838	2602	2324	2348	2317

Note: DOD data for 1978 are estimated.

99.00

PERCENT OF TOTAL FEDERAL SUPPORT FROM EACH FEDERAL AGENCY

Year	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
DOD	9.6	10.6	10.3	10.6	10.2	11.6	10.5	9.9	9.9	9.7	9.5	9.9	11.1	12.4	14.5	14.7
HHS TOTAL	39.9	37.7	39.3	39.9	37.6	41.7	43.3	41.9	41.8	42.4	42.8	36.6	35.4	34.0	31.7	32.0
NIH	23.6	24.6	25.6	29.7	24.5	24.8	25.3	23.4	21.7	21.2	22.1	21.8	22.2	23.0	22.9	23.5
NOEA	13.3	9.8	10.6	6.8	4.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other HHS	3.0	3.3	3.1	3.4	9.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER HHS	16.3	13.1	13.7	10.2	13.1	16.9	17.9	18.5	20.2	21.2	20.8	14.8	15.0	11.0	8.8	8.5
NSF	25.1	27.8	25.7	23.1	23.0	18.4	18.2	18.4	17.9	17.6	17.5	17.5	17.8	19.5	20.0	20.5
USDA	2.1	2.2	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AEC	5.7	5.5	4.6	4.0	3.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NASA	5.2	4.0	3.8	2.8	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER FED.	12.3	12.2	14.2	19.5	22.5	28.3	28.0	29.8	30.3	30.3	30.2	36.0	35.7	34.1	33.8	32.7

PERCENT OF AGENCY SUPPORT OF BROAD FIELDS

ENGINEERING

Year	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
DOD	22.2	24.3	23.3	27.3	26.3	27.4	27.5	26.8	26.8	25.4	25.7	26.4	29.8	32.3	34.7	34.0
HHS TOTAL	18.1	16.4	17.1	14.1	11.2	8.7	10.0	9.9	8.5	9.5	9.0	5.3	4.5	4.2	4.1	4.1
NIH	8.3	8.6	9.1	8.4	6.6	6.5	7.0	6.5	5.1	5.2	4.5	4.2	3.8	3.4	3.4	3.5
NDEA	8.5	6.1	6.4	3.7	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other HHS	1.2	1.7	1.6	2.0	2.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER HHS	9.8	7.7	8.0	5.7	4.6	2.2	3.0	3.4	3.4	4.2	4.5	1.2	0.7	0.8	0.7	0.5
NSF	24.8	26.8	24.3	23.9	26.7	24.5	25.0	24.3	23.8	22.4	22.5	21.8	21.7	23.5	22.5	23.3
USDA	0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AEC	6.9	6.7	5.0	4.7	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NASA	10.6	8.5	7.9	5.5	5.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER FED.	17.1	16.8	21.9	24.4	27.3	39.4	37.5	41.0	40.9	42.8	42.6	45.4	43.9	40.0	38.7	38.6

PHYSICAL SCIENCES

Year	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
DOD	10.9	12.3	11.8	11.4	11.3	12.6	10.7	9.7	8.6	8.4	8.9	8.7	9.9	9.6	10.9	11.9
HHS TOTAL	23.4	19.3	19.6	18.4	14.5	13.8	15.3	16.0	16.4	16.8	17.2	15.8	14.8	15.0	14.3	14.3
NIH	12.7	10.6	10.3	11.7	10.1	12.2	13.9	13.8	12.8	12.9	13.3	14.2	13.1	13.8	13.1	13.3
NDEA	10.3	7.8	8.6	6.2	3.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other HHS	0.5	1.0	0.7	0.5	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER HHS	10.7	8.8	9.3	6.7	4.3	1.7	1.4	2.2	3.6	3.9	3.9	1.6	1.7	1.1	1.1	1.0
NSF	35.4	41.6	38.8	42.4	44.2	42.9	42.1	42.8	41.2	40.2	38.9	37.4	38.9	41.0	41.5	41.5
USDA	0.5	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AEC	13.8	13.4	11.7	11.1	9.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NASA	6.9	5.6	5.6	5.4	6.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER FED.	9.1	7.8	8.4	11.3	13.6	30.7	31.8	31.5	33.8	34.6	35.1	38.1	36.4	34.4	33.3	32.2

MATHEMATICAL SCIENCES

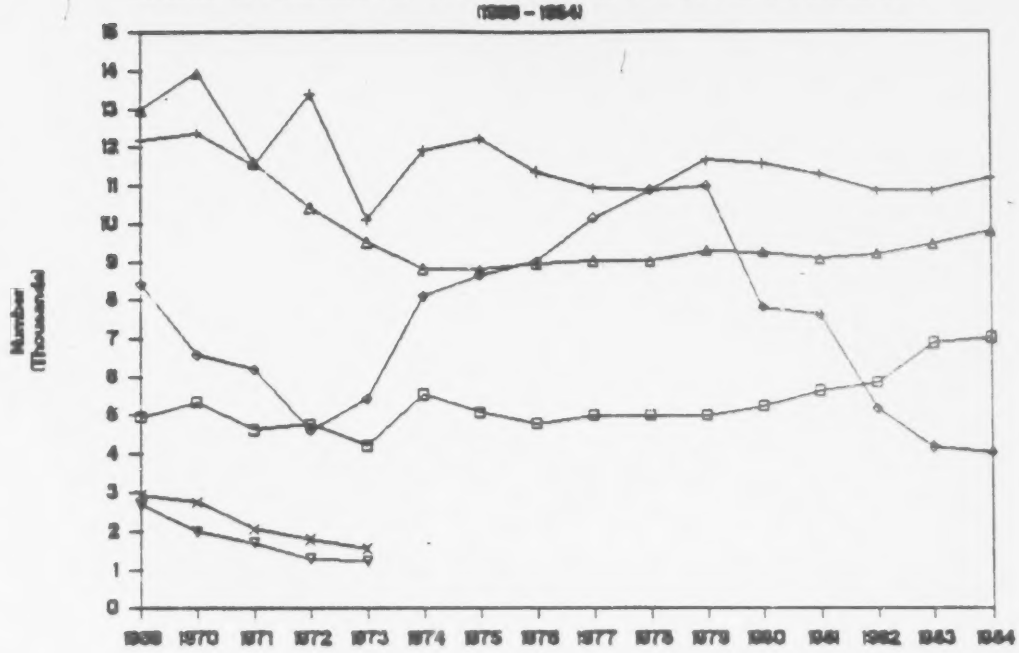
Year	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
DOD	10.1	10.8	12.4	13.1	14.2	41.9	39.9	40.9	35.9	37.4	37.3	36.1	42.5	41.1	41.6	46.2
HHS TOTAL	23.2	18.4	24.0	20.7	16.0	8.7	11.7	10.6	9.9	10.9	8.7	7.1	4.9	4.8	3.9	2.6
NIH	5.8	5.5	6.5	7.8	7.7	6.8	9.1	9.2	8.5	8.0	6.3	5.8	4.2	3.8	3.0	2.3
NDEA	15.7	10.8	15.2	10.8	7.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other HHS	1.7	2.1	2.2	2.1	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER HHS	17.4	12.9	17.5	12.9	8.4	1.9	2.6	1.4	1.4	2.9	2.4	1.3	0.8	1.0	0.9	0.3
NSF	53.0	59.9	48.2	50.4	49.8	35.2	34.6	33.7	37.7	36.5	35.8	34.6	34.9	34.5	33.8	36.0
USDA	0.4	0.3	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AEC	1.2	1.4	2.2	2.7	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NASA	5.8	2.4	2.1	0.9	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER FED.	6.3	6.7	8.1	12.2	16.8	14.2	13.8	14.8	16.5	15.2	18.2	22.2	17.7	19.5	20.6	15.2

PERCENT OF AGENCY SUPPORT OF [illegible] FIELDS

Year	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
LIFE SCIENCES																
DOD	1.1	1.3	0.9	0.5	0.9	2.7	1.7	1.7	2.8	1.7	1.5	1.6	1.6	1.8	3.0	24.1
HHS TOTAL	62.9	61.0	50.3	67.5	66.7	70.2	72.2	70.3	70.6	70.7	71.9	65.2	64.6	65.5	65.2	656.8
NIH	48.8	50.0	41.1	59.2	55.6	47.0	45.7	41.8	39.0	38.1	38.7	37.8	39.9	44.2	46.4	472.6
NDEA	11.5	8.5	7.3	5.1	2.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other HHS	2.6	2.5	1.9	3.2	8.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER HHS	14.1	11.0	9.2	8.3	11.2	23.2	26.5	28.6	31.6	32.6	33.2	27.4	24.7	21.3	18.8	184.2
NSF	16.5	17.3	13.5	10.9	9.7	6.2	6.2	6.7	6.6	6.8	6.1	6.3	6.0	6.6	6.6	67.9
USDA	6.7	7.3	5.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AEC	1.9	1.6	1.0	1.1	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NASA	1.6	1.1	0.7	0.6	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER FED.	9.4	10.4	8.9	19.5	21.1	20.8	19.9	21.3	20.0	20.8	20.5	26.9	27.8	26.1	25.3	-648.9
PSYCHOLOGY																
DOD	3.5	2.6	1.6	1.7	2.2	4.4	3.1	3.5	4.0	3.8	4.4	4.0	4.8	5.0	6.8	6.8
HHS TOTAL	69.8	69.8	68.8	72.3	70.4	73.9	72.5	71.8	71.8	73.9	72.2	58.7	56.4	56.9	50.7	52.7
NIH	48.5	52.3	53.1	59.2	26.7	33.5	33.1	31.2	29.9	27.5	31.3	31.7	31.0	30.4	29.5	32.4
NDEA	11.0	8.4	8.1	5.2	4.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other HHS	10.3	9.0	7.6	7.9	38.9	40.4	39.4	40.5	41.9	46.4	40.9	27.0	25.4	26.6	21.2	20.3
OTHER HHS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NSF	9.1	10.2	10.4	9.6	9.3	6.2	6.2	5.2	5.7	5.6	7.4	8.8	8.4	9.0	9.6	10.6
USDA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AEC	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NASA	1.0	0.8	0.6	0.3	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER FED.	16.6	16.6	14.4	16.1	19.6	15.5	18.3	18.3	18.5	16.7	16.1	28.5	30.4	29.0	32.9	29.8
SOCIAL SCIENCES																
DOD	2.6	4.5	3.5	3.7	2.2	5.4	5.2	4.6	6.0	5.7	5.7	6.6	5.7	7.0	9.2	9.5
HHS TOTAL	59.7	54.3	52.0	49.6	42.7	43.4	43.6	40.1	38.0	37.5	41.4	28.5	28.2	23.7	16.7	16.3
NIH	19.2	21.7	21.2	22.9	12.5	11.1	11.6	10.4	7.6	6.1	9.8	10.5	11.0	9.5	8.7	9.0
NDEA	33.0	24.4	23.2	18.4	13.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other HHS	7.5	8.2	7.6	8.3	16.4	32.3	31.9	29.7	30.4	31.4	31.6	18.0	17.2	14.2	8.0	7.3
OTHER HHS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NSF	19.1	21.9	18.7	16.4	17.6	11.4	10.8	10.2	9.1	9.0	9.5	10.4	9.8	9.1	9.5	8.6
USDA	3.0	2.8	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AEC	0.2	1.5	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NASA	0.7	0.6	0.4	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER FED.	14.7	14.3	16.0	29.9	37.2	39.8	40.5	45.1	46.9	47.8	43.4	54.5	56.3	60.2	64.6	65.6

GRAD STUDENTS W/FED SUPPORT BY AGENCY

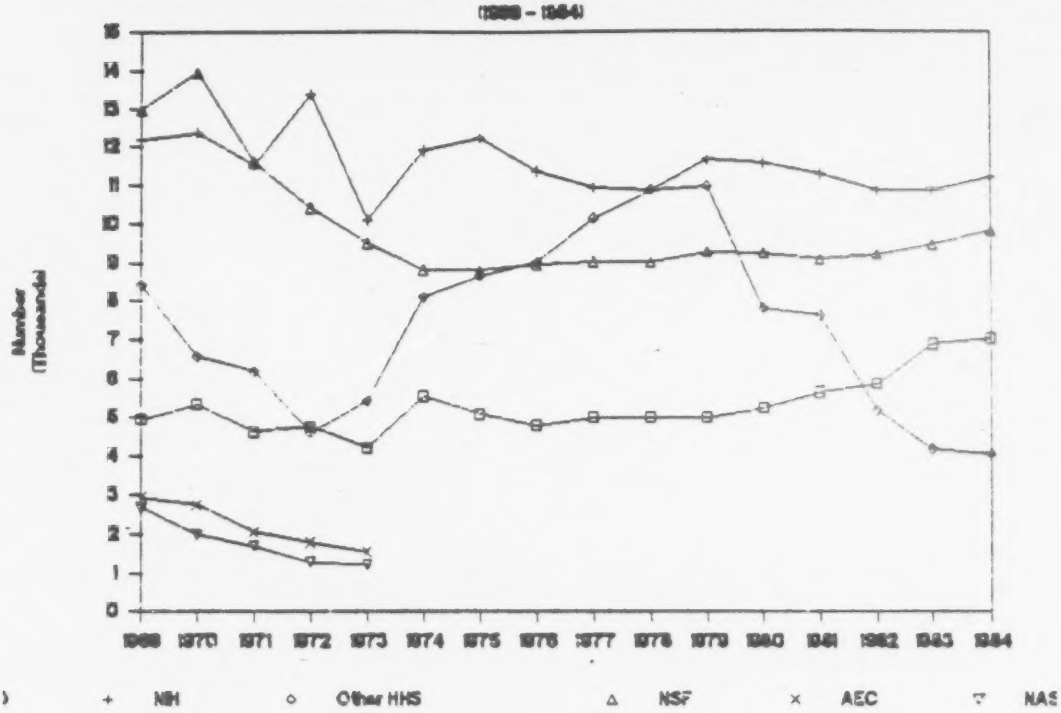
(1969 - 1984)



+ NIH ○ Other HHS △ NSF × AEC ▽ NAS

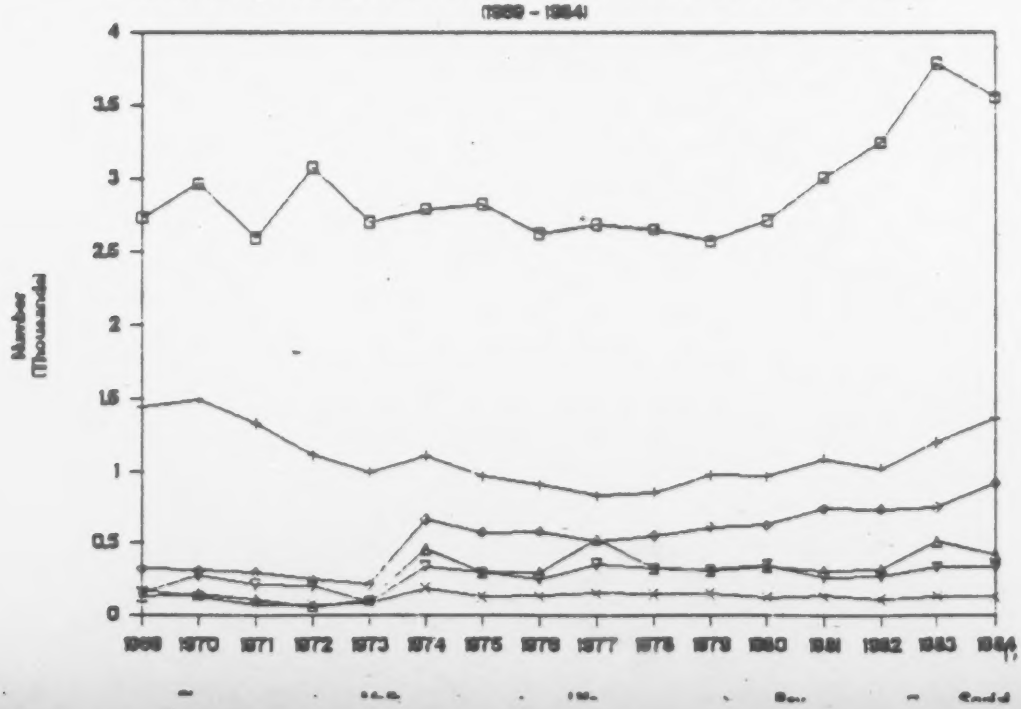
GRAD STUDENTS W/FED SUPPORT BY AGENCY

(1969 - 1984)



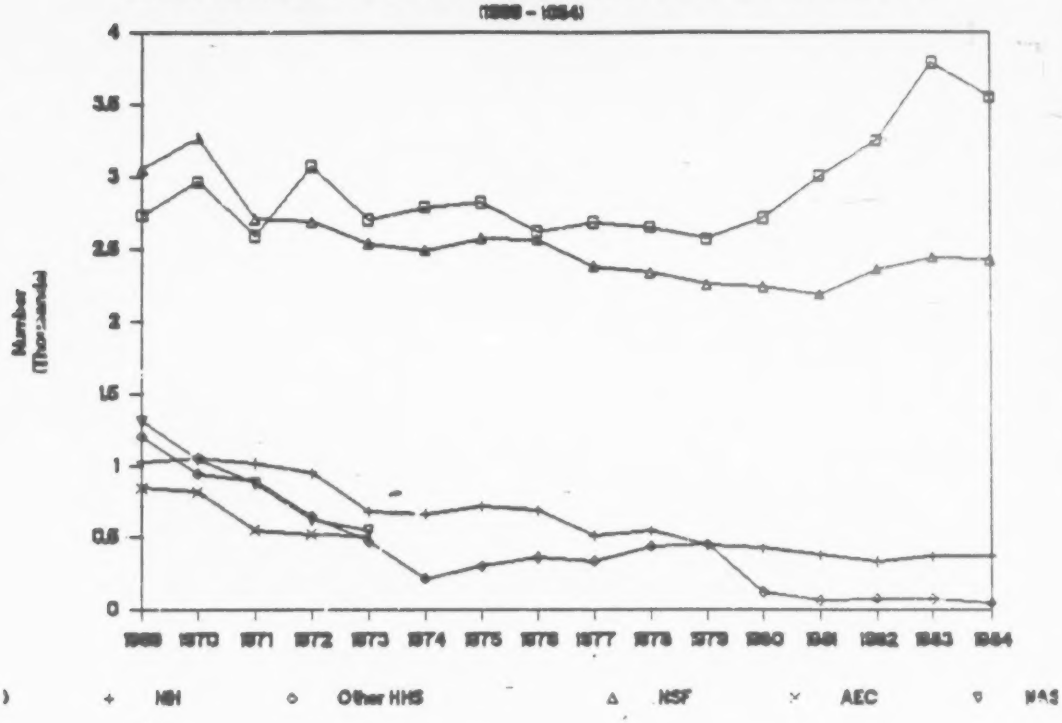
GRAD STUDENTS WITH DOD SUPPORT BY FIELD

(1969 - 1984)



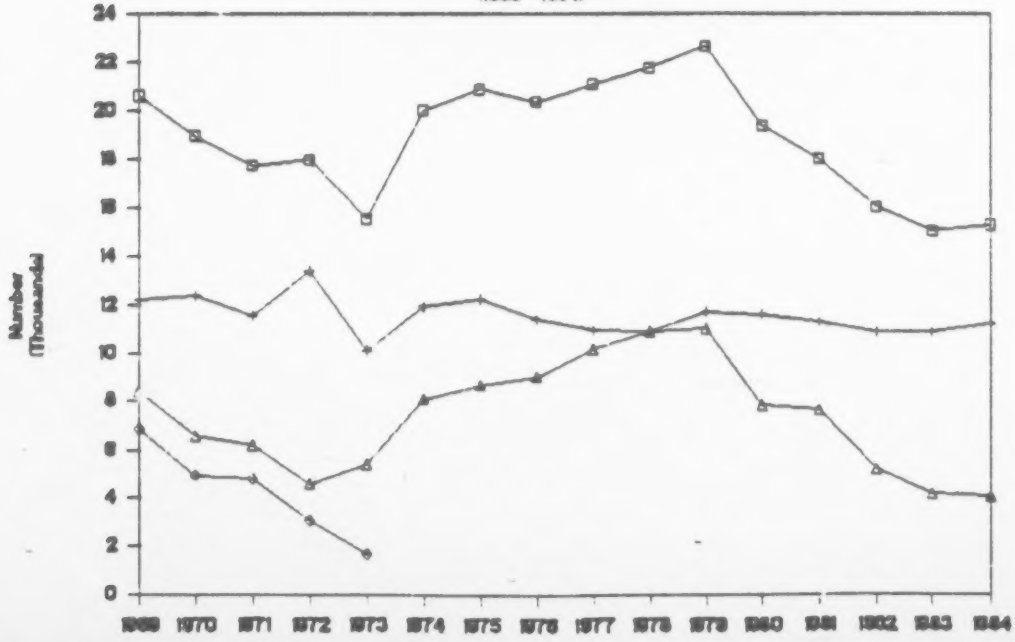
ENG GRAD STUD W/FED SUPPORT BY AGENCY

(1969 - 1984)

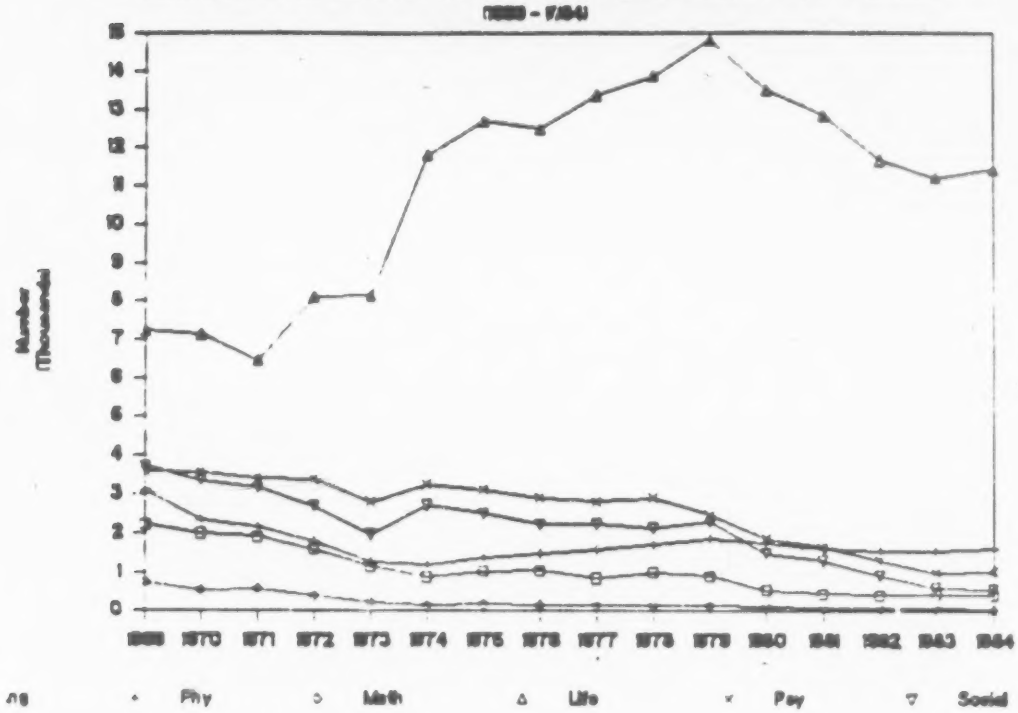


GRADUATE STUDENTS WITH HHS SUPPORT

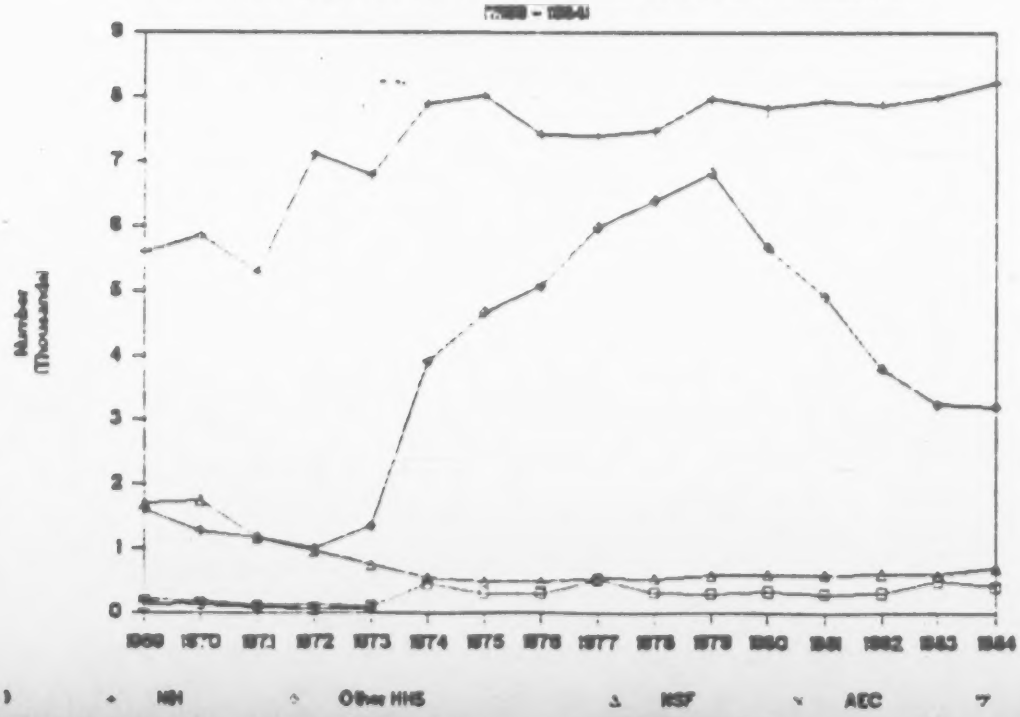
(1969 - 1984)



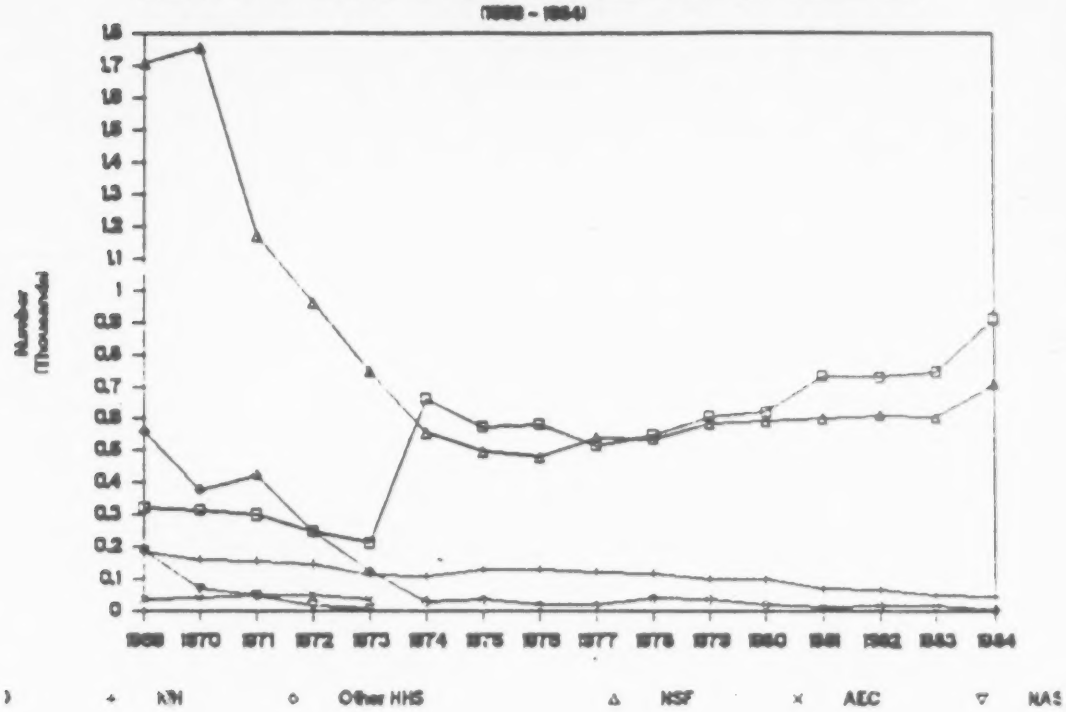
GRAD STUDENTS WITH HHS SUPPORT BY FIELD



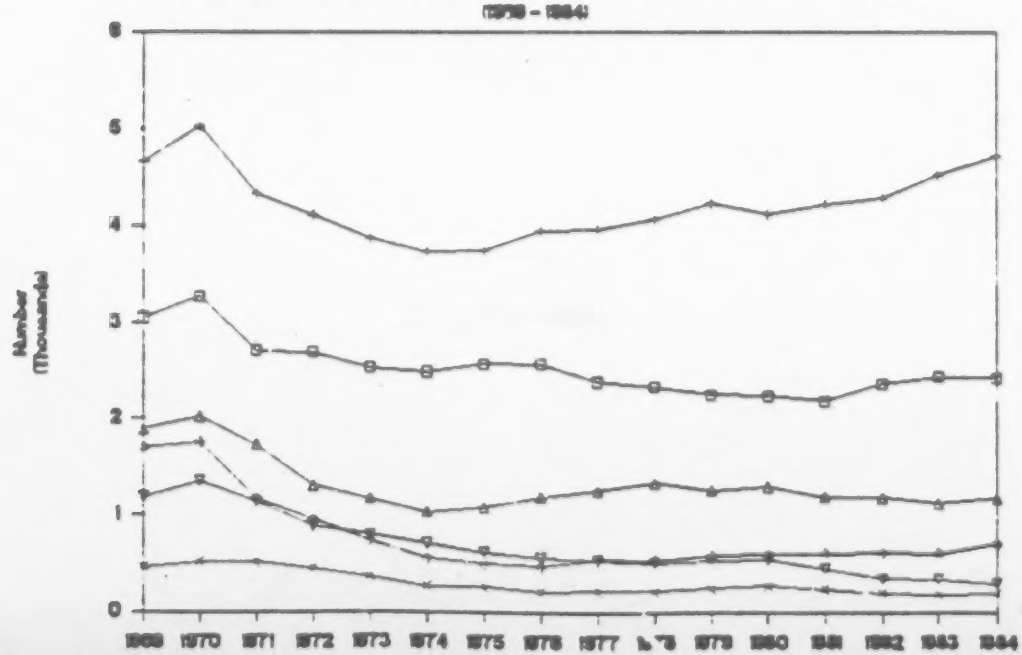
LIFE SCI GRAD STUD W/FED SUP BY AGENCY



MATH/C GRAD STUD W/FED SUP BY AGENCY

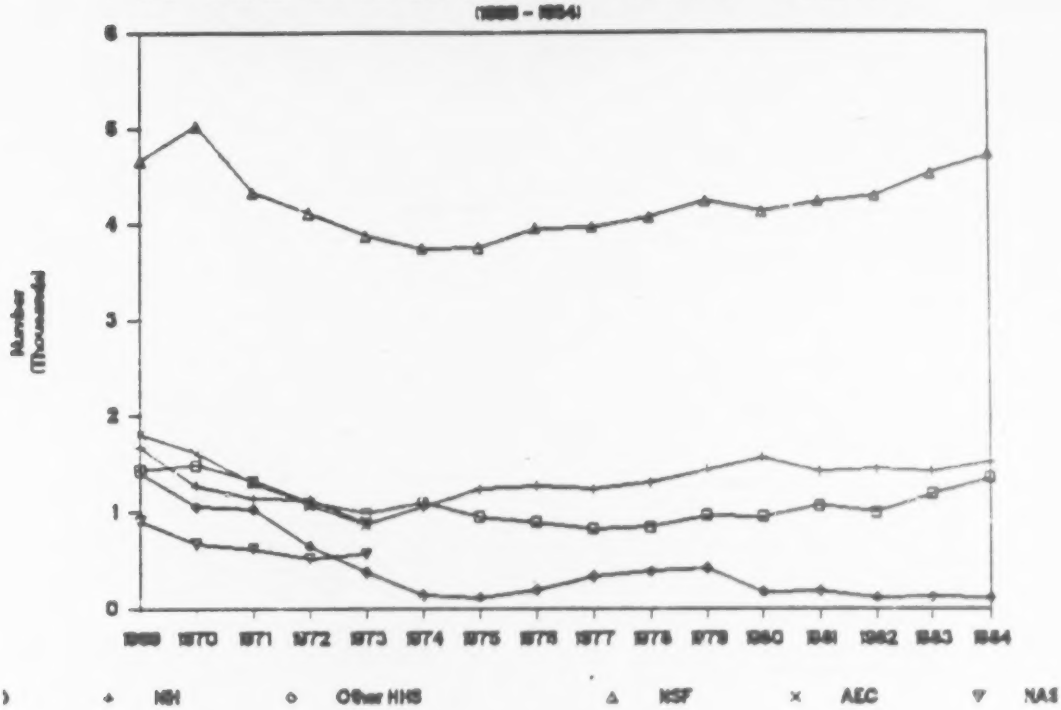


GRAD STUDENTS WITH NSF SUPPORT BY FIELD



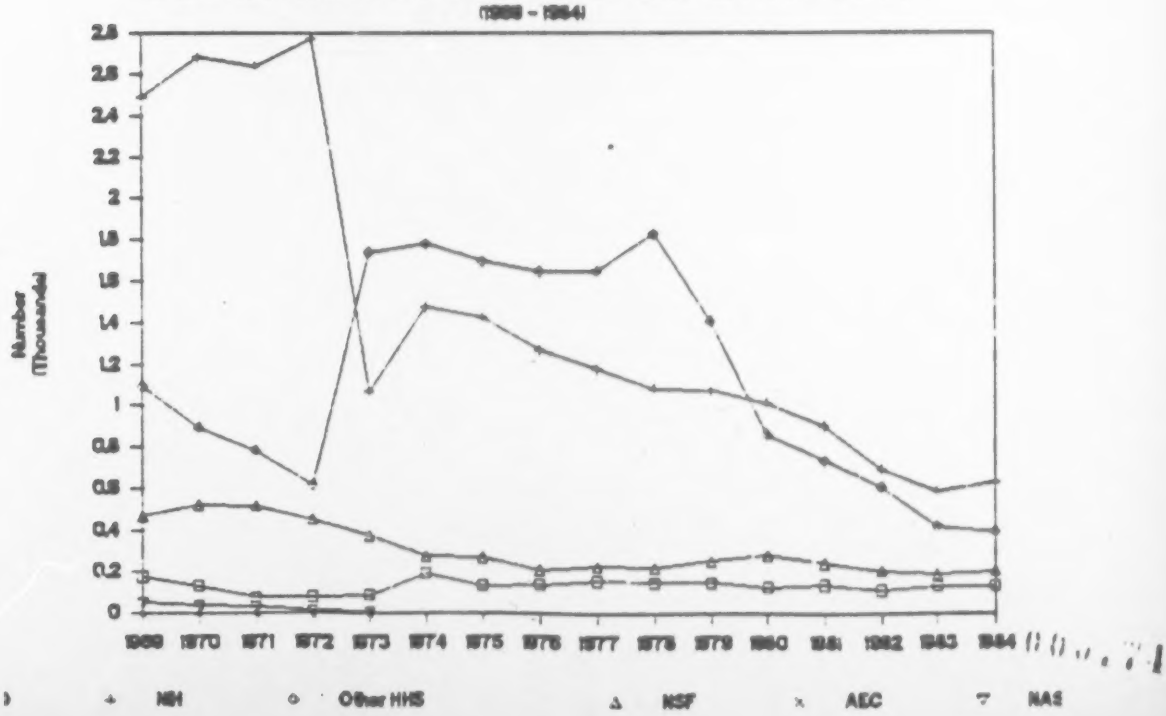
PS GRAD STUD W/FED SUPPORT BY AGENCY

(1969 - 1984)



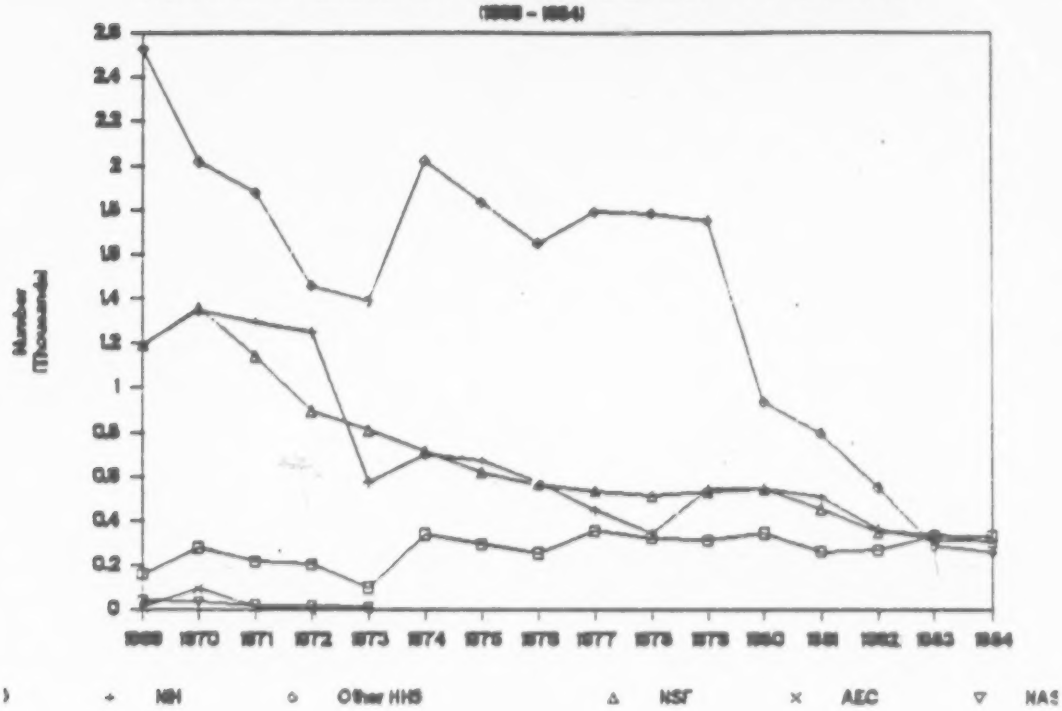
PSYCH GRAD STUD W/FED SUP BY AGENCY

(1969 - 1984)



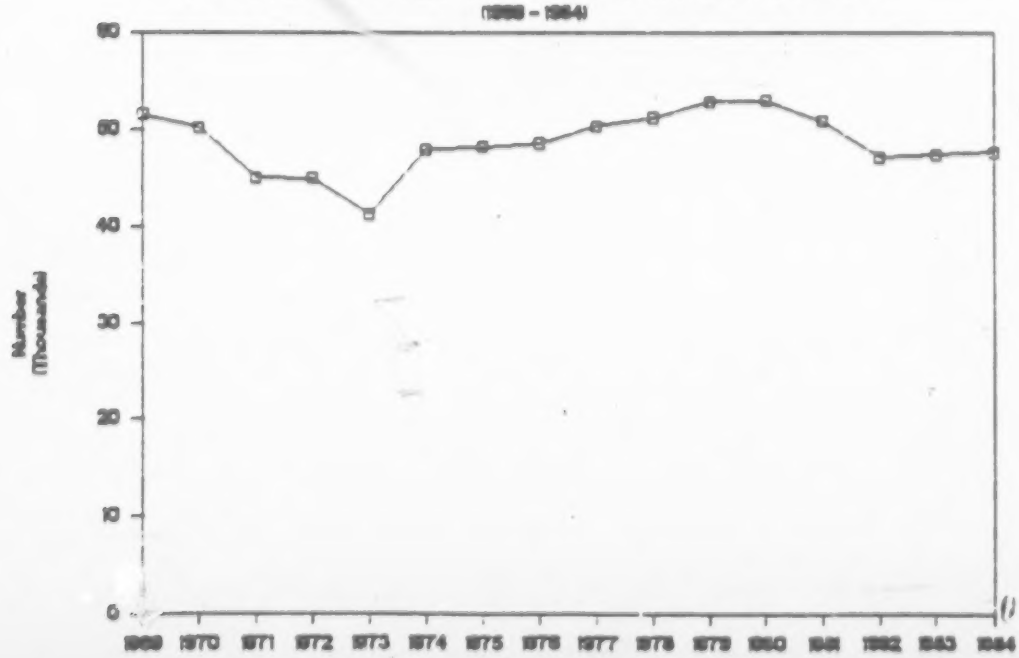
SOCIAL S GRAD STUD W/FED SUP BY AGENCY

(1969 - 1984)



TOTAL NUMBER WITH FEDERAL SUPPORT

(1969 - 1984)



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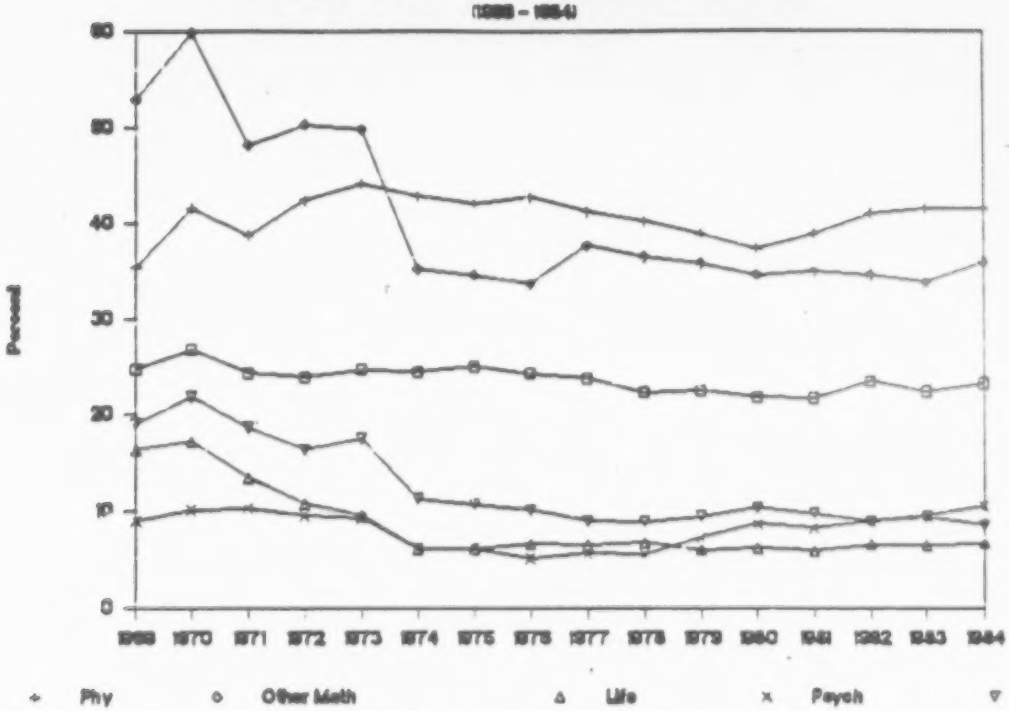
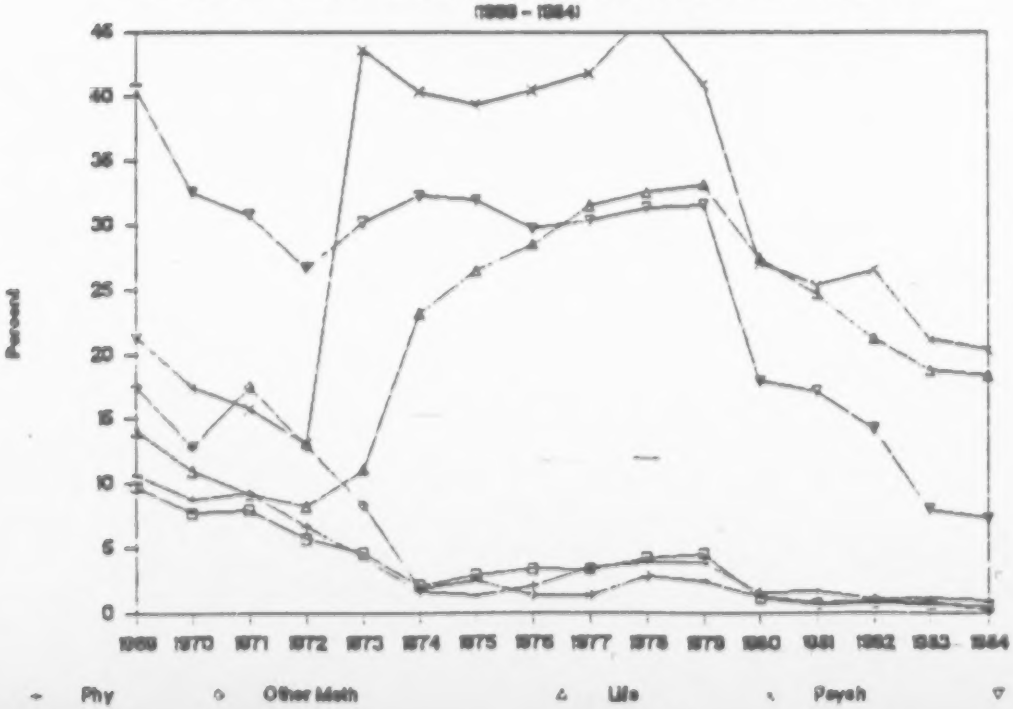
PERCENT OF NSF SUPPORT BY FIELD

(1969 - 1984)



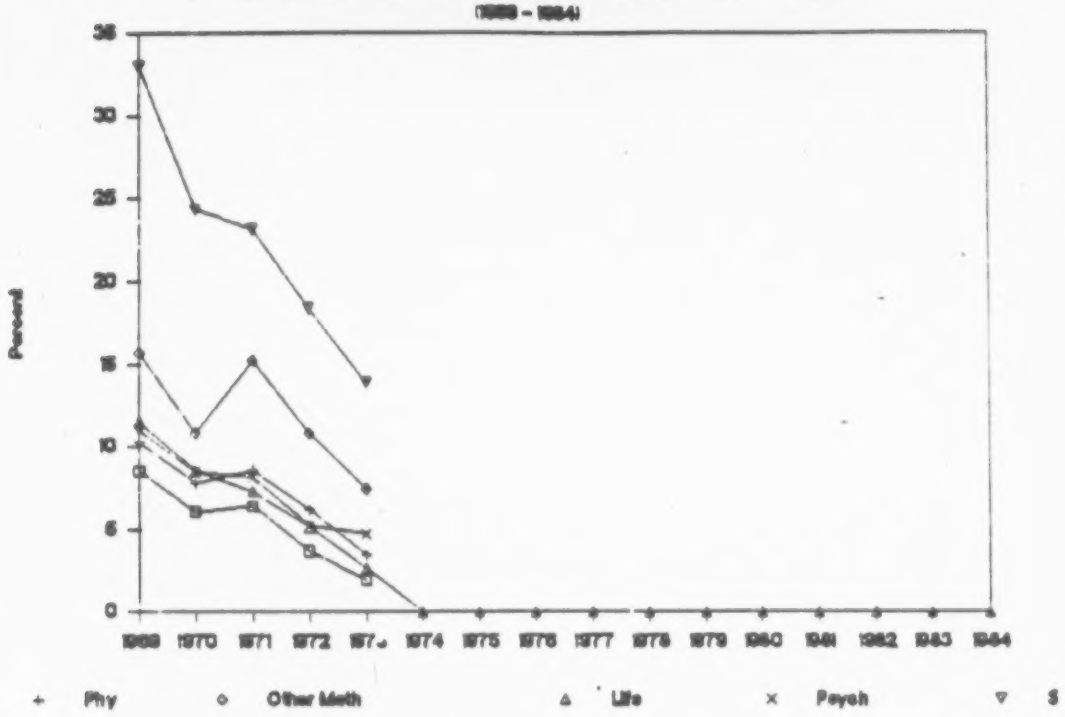
PERCENT OF OTHER HHS SUPPORT BY FIELD

(1969 - 1984)



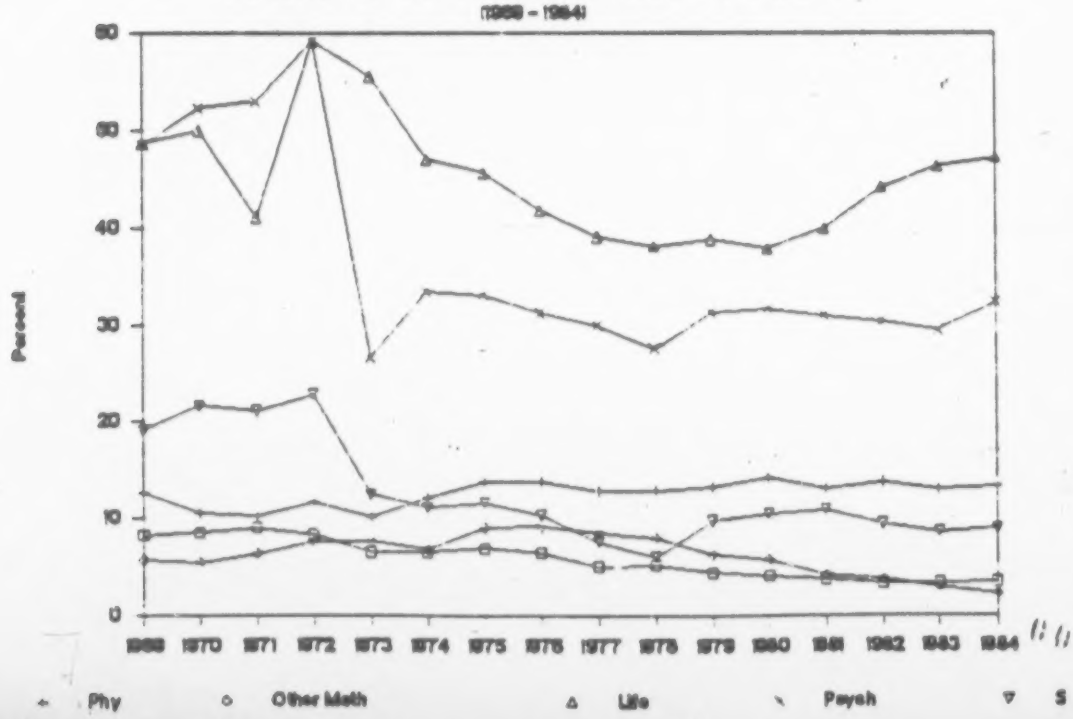
PERCENT OF NDEA SUPPORT BY FIELD

(1969 - 1984)



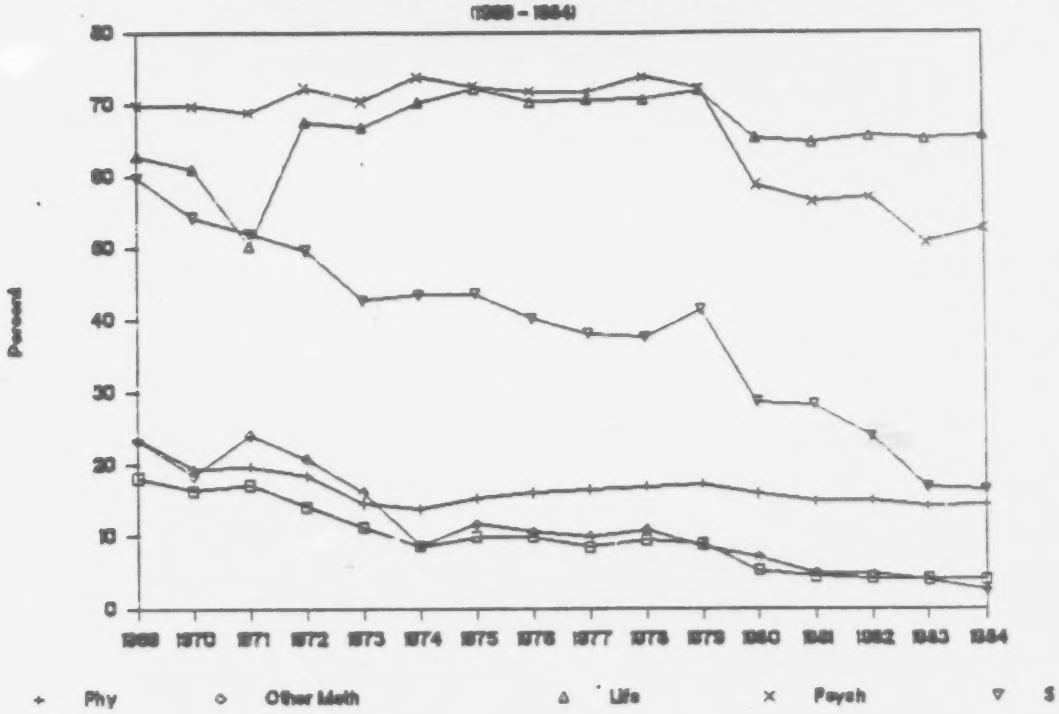
PERCENT OF NIH SUPPORT BY FIELD

(1969 - 1984)



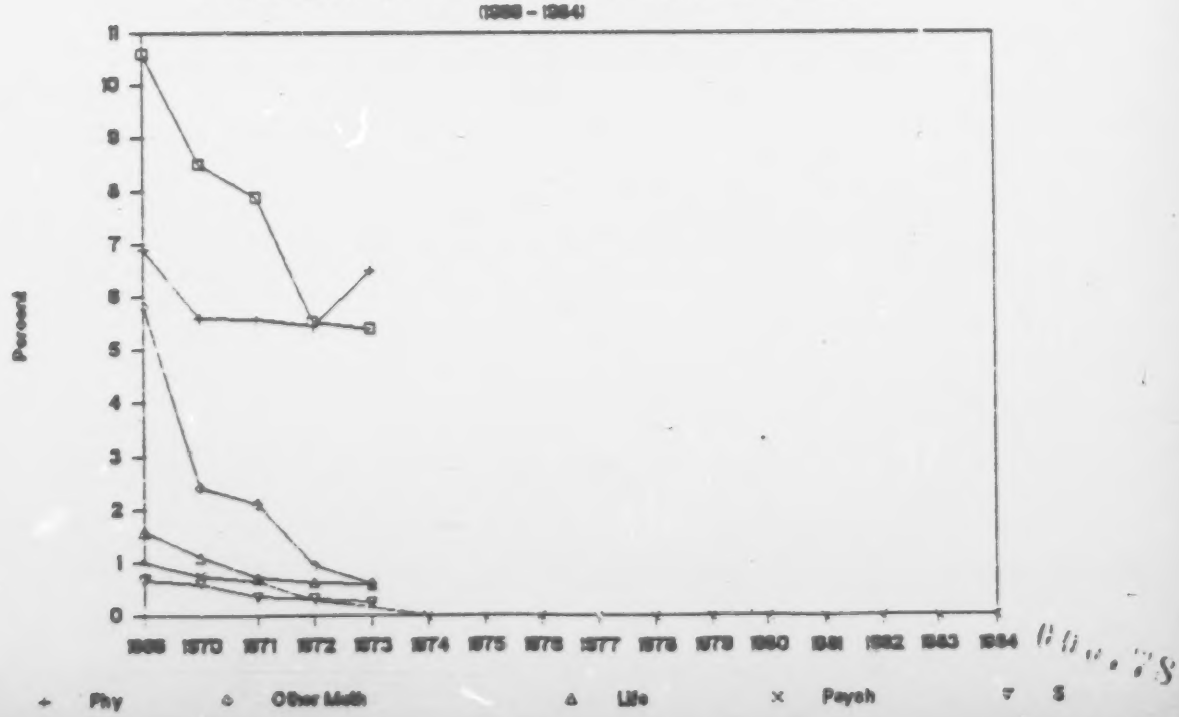
PERCENT OF HHS SUPPORT BY FIELD

(1969 - 1984)



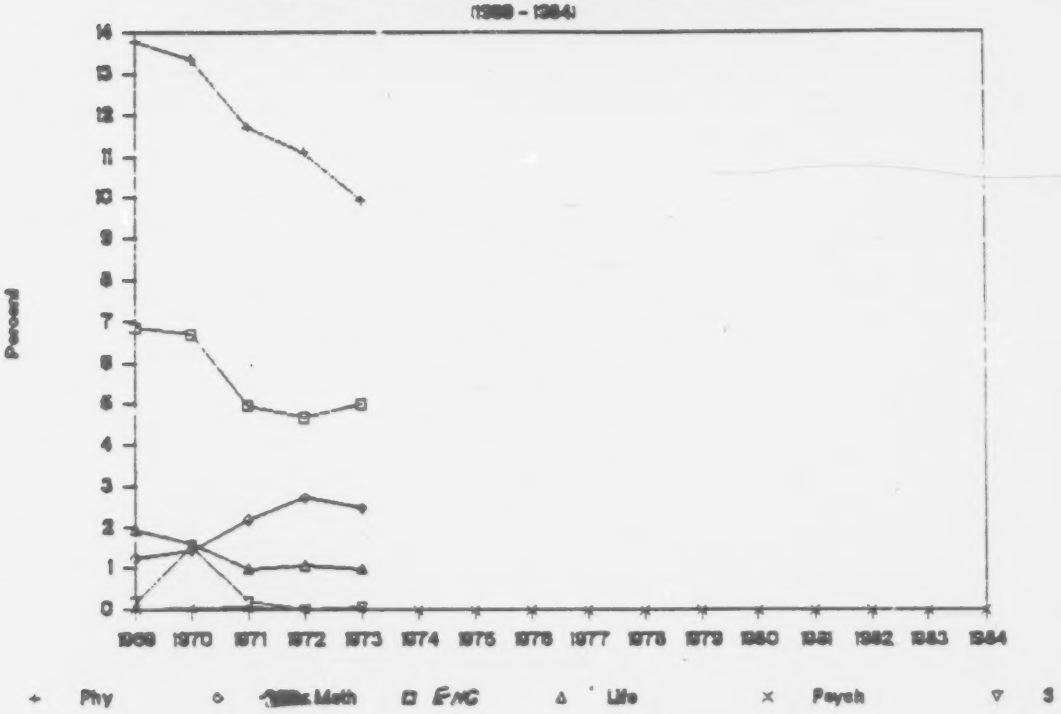
PERCENT OF NASA SUPPORT BY FIELD

(1969 - 1984)



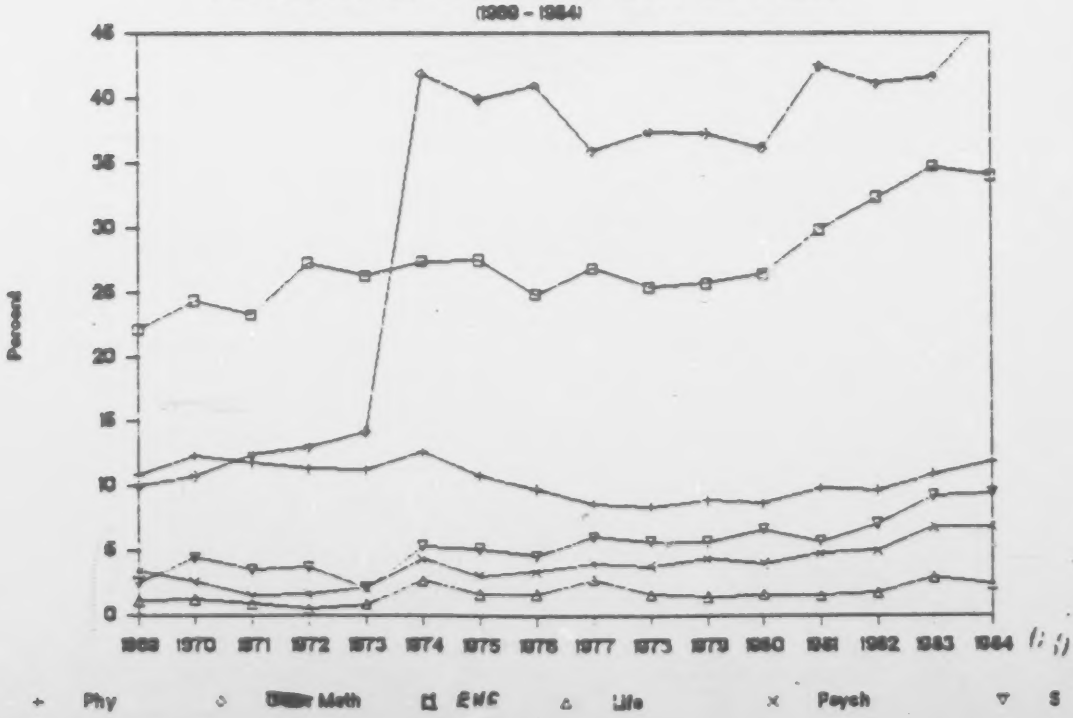
PERCENT OF AEC SUPPORT BY FIELD

(1969 - 1984)



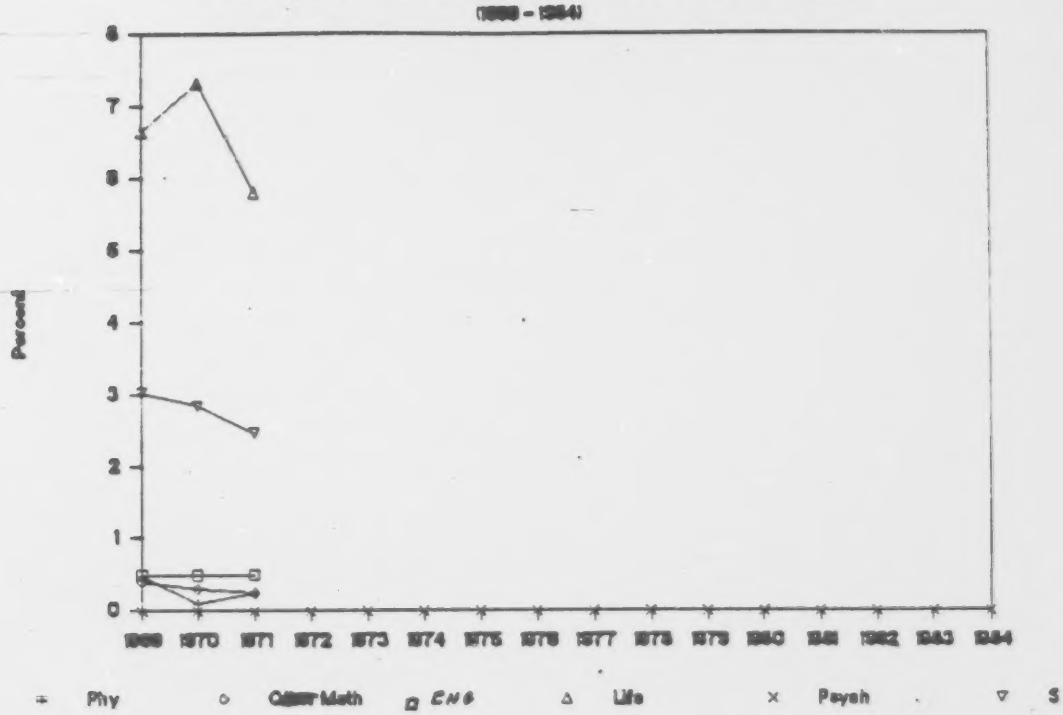
PERCENT OF DOD SUPPORT BY FIELD

(1969 - 1984)



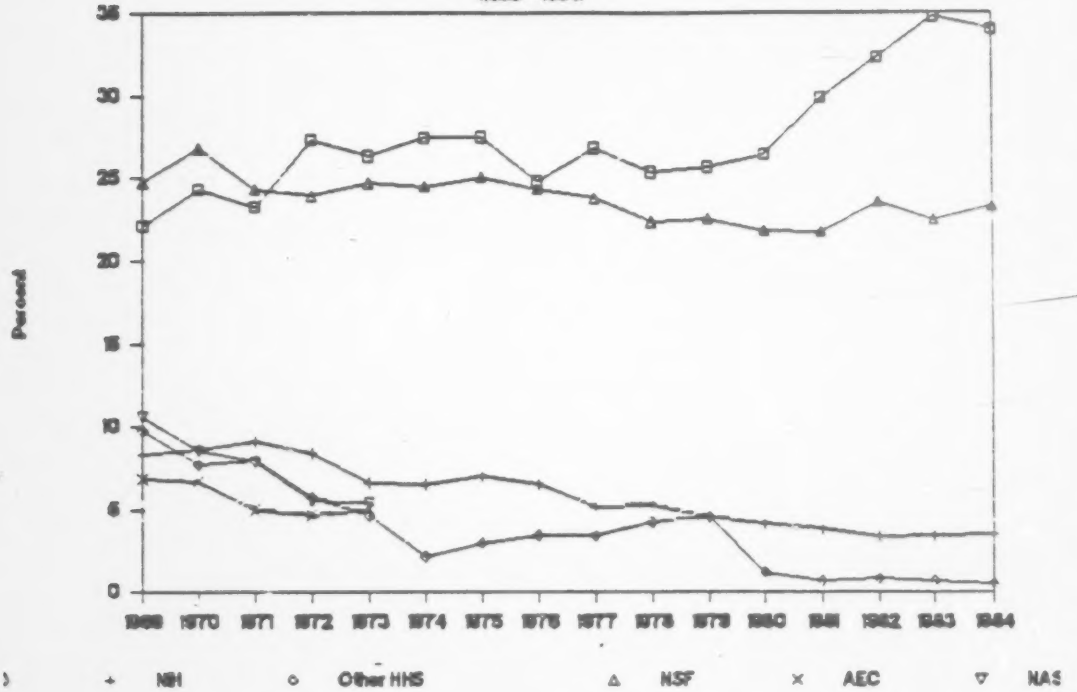
PERCENT OF USDA SUPPORT BY FIELD

(1969 - 1984)



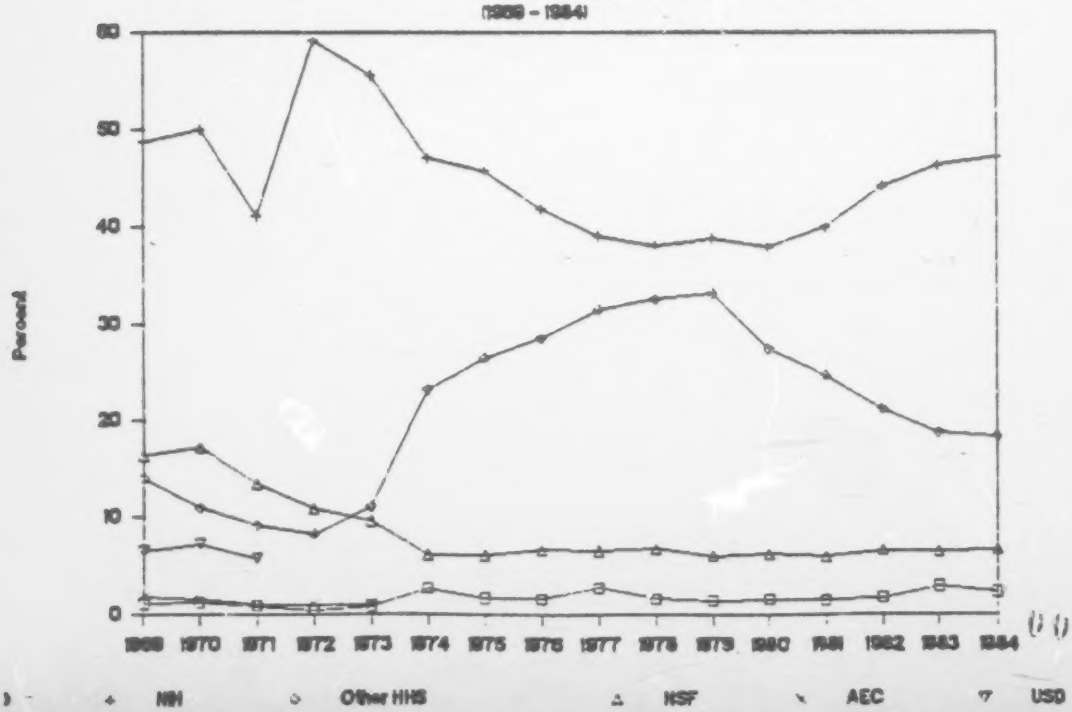
% SUPPORT OF ENGINEERING BY AGENCY

(1969 - 1984)



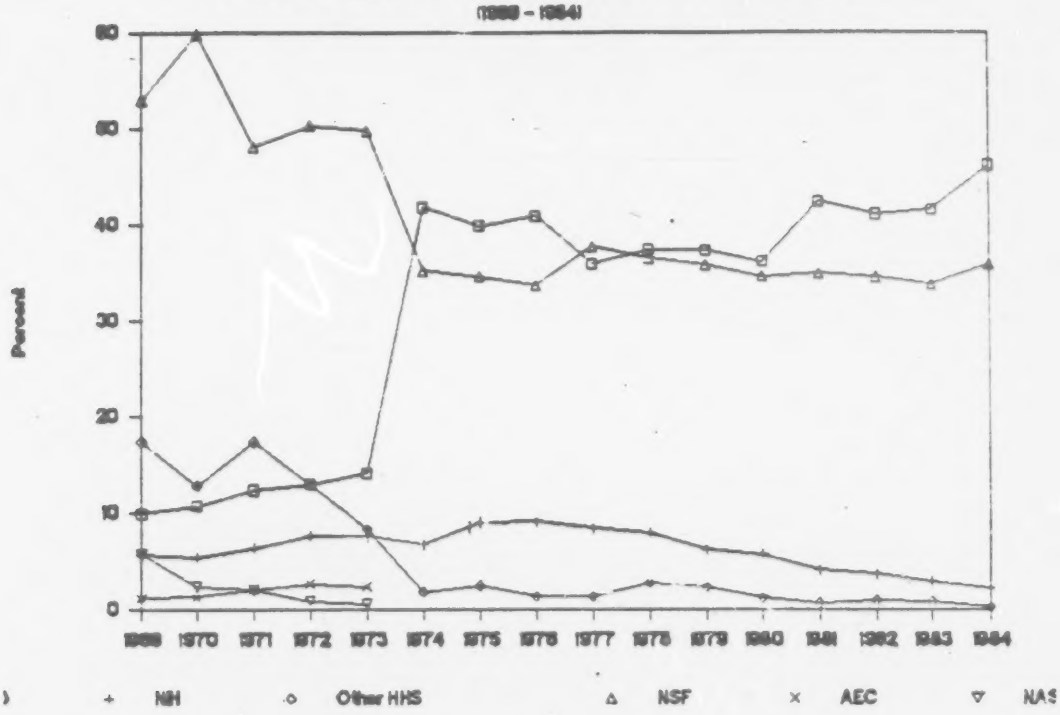
% SUPPORT OF LIFE SCIENCES BY AGENCY

(1969 - 1984)



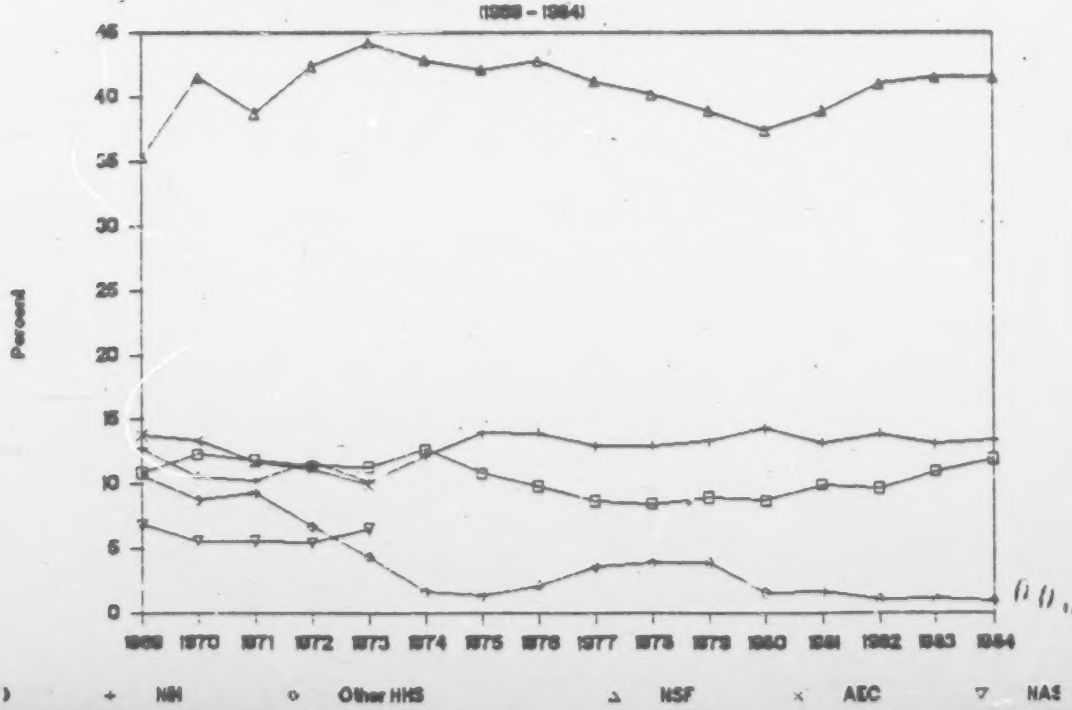
% SUPPORT OF MATH/CS BY AGENCY

(1969 - 1984)



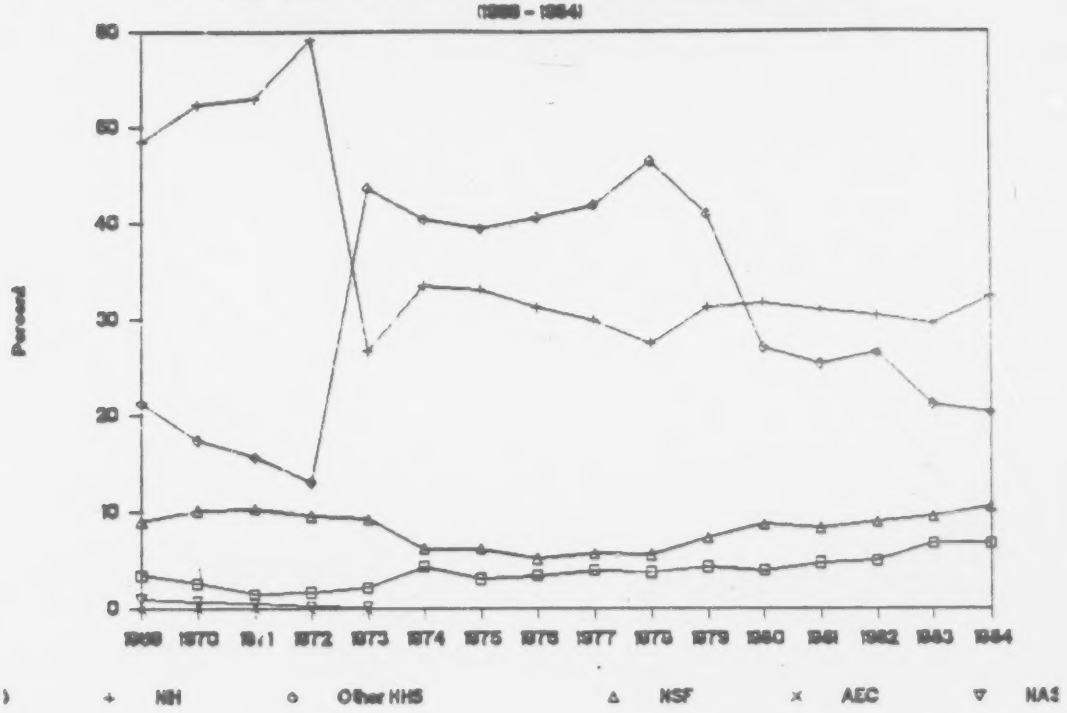
% SUPPORT OF PHYSICAL SCI BY AGENCY

(1969 - 1984)



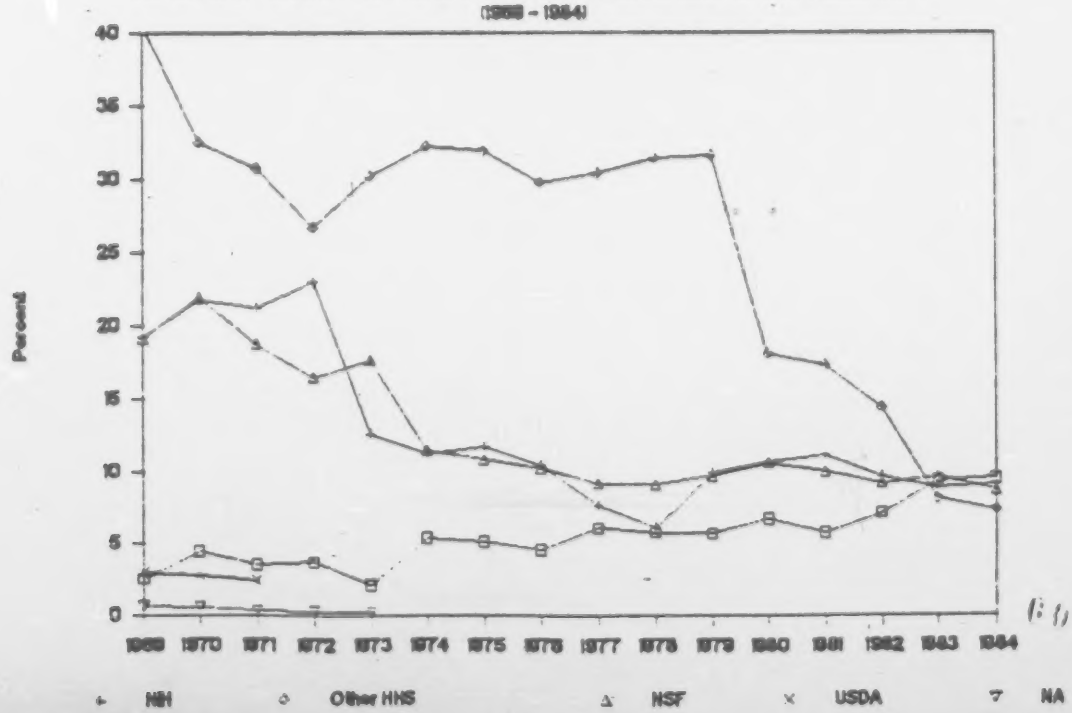
% SUPPORT OF PSYCHOLOGY BY AGENCY

(1969 - 1984)



% SUPPORT OF SOCIAL SCIENCES BY AGENCY

(1969 - 1984)



SCIENCE AND ENGINEERING GRADUATE STUDENTS WITH FEDERAL SUPPORT

COMPARED WITH S/E PHD AWARDS, BY FIELD

1966-1984

PHDSUP

I09,17,25,33,41,49,57,65,73,81,89,97,A5,B3.

SCIENCE & ENGINEERING GRADUATE STUDENTS WITH FEDERAL SUPPORT
COMPARED WITH S/E PhD AWARDS

NUMBER WITH FEDERAL SUPPORT

Year	Total	Eng	Phys Sc	Math/CS	Life	Psych	Soc Sci
1966	44617	10853	13269	3226	8461	3923	4885
1967	53518	13486	14798	3520	10904	4673	6137
1968	48402	9269	12104	2905	8464	4541	5436
1969	51620	12334	13187	3223	11513	5127	6236
1970	50256	12201	12088	2936	11710	5127	6194
1971	49916	12395	11165	2427	12850	4977	6102
1972	45029	11246	9687	1908	12037	4691	5460
1973	41336	10273	8750	1497	12209	3982	4596
1974	47989	10178	8728	1580	16816	4408	6279
1975	48249	10280	8893	1438	17586	4307	5745
1976	48593	10565	9226	1425	17770	4057	5550
1977	50378	10537	9629	1437	18941	3936	5898
1978	51269	10451	10111	1471	19620	3936	5680
1979	52871	10757	10883	1630	20612	3438	5551
1980	52939	11107	11024	1721	20687	3189	5211
1981	50897	10923	10864	1726	19868	2895	4621
1982	47206	11005	10452	1775	17829	2283	3862
1983	47445	11916	10895	1792	17227	1980	3635
1984	47764	11500	11372	1972	17444	1942	3534

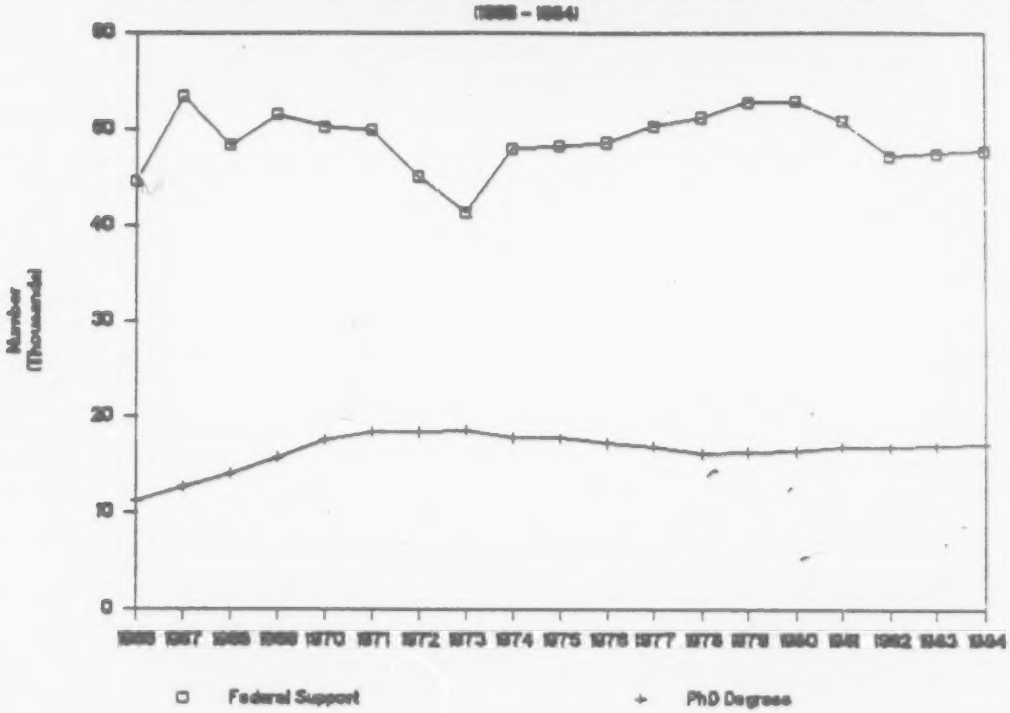
PhD DEGREES

Year	Total	Eng	Phys Sc	Math/CS	Life	Psych	Soc Sci
1966	11298	3045	2304	801	2696	1046	1406
1967	12759	3462	2614	870	2900	1231	1682
1968	14128	3593	2932	983	3445	1268	1907
1969	15839	3859	3377	1161	3779	1551	2112
1970	17639	4313	3681	1343	4131	1668	2503
1971	18466	4391	3654	1327	4534	1782	2778
1972	18412	4103	3704	1295	4478	1881	2951
1973	18598	4016	3560	1264	4524	2089	3145
1974	17865	3631	333[illegible]	1229	4220	2339	3110
1975	17784	3628	3151	1188	4252	2442	3123
1976	17288	3433	2835	1100	4203	2581	3136
1977	16937	3344	2599	1039	4199	2761	2995
1978	16196	3137	2442	1001	4179	2597	2840
1979	16363	3104	2517	966	4403	2674	2699
1980	16483	3095	2519	964	4495	2775	2635
1981	16935	3141	2551	980	4669	2955	2639
1982	16862	3286	2621	932	4693	2780	2550
1983	17016	3269	2822	960	4350	3108	2507
1984	17117	3298	2979	946	4448	2973	2473

Note: Field data in 1968 include only data from departments responding in three successive years.
Total includes all students with federal support.

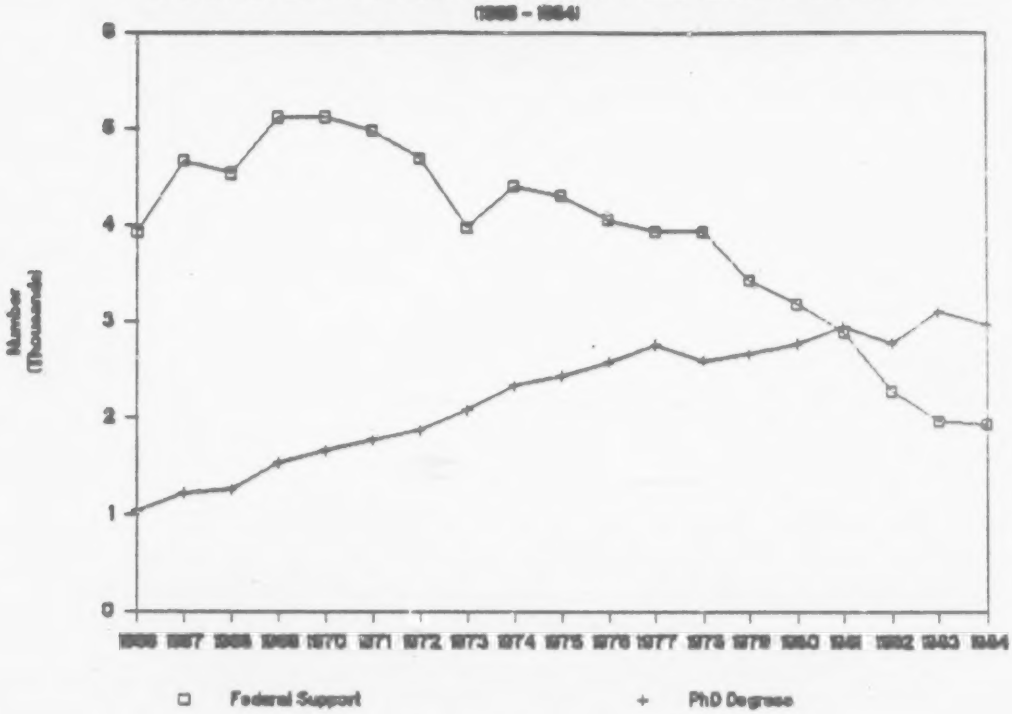
TOTAL S/E GRAD STUD W FED SUP & PhDs

(1966 - 1984)



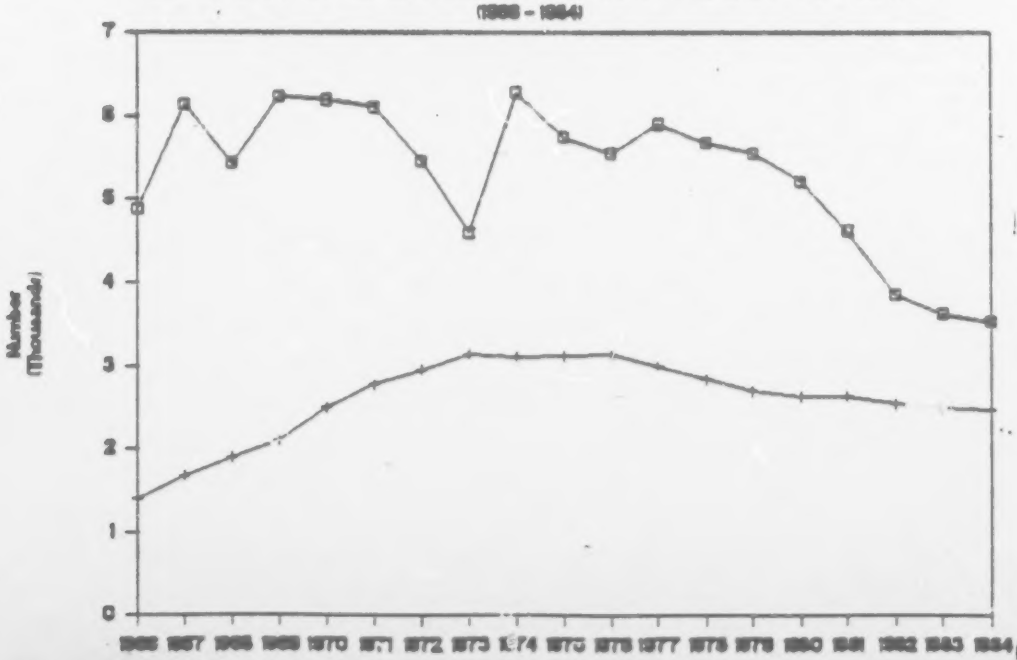
PSYCH S/E GRAD STUD W FED SUP & PhDs

(1966 - 1984)



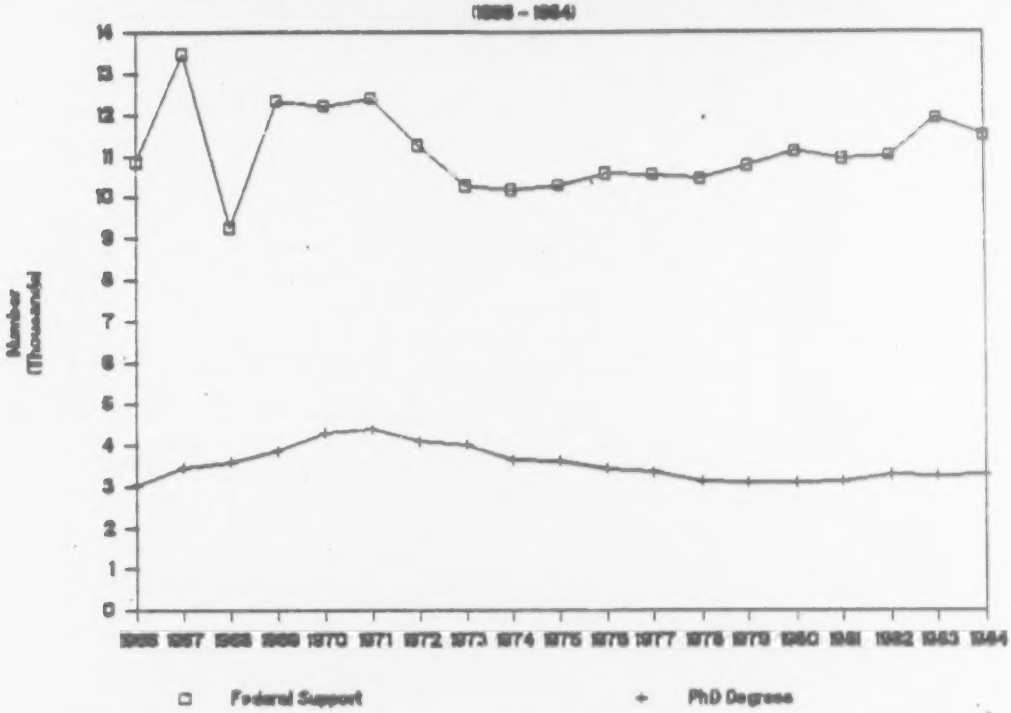
SOC SCI S/E GRAD STUD W FED SUP & PhDs

(1966 - 1984)



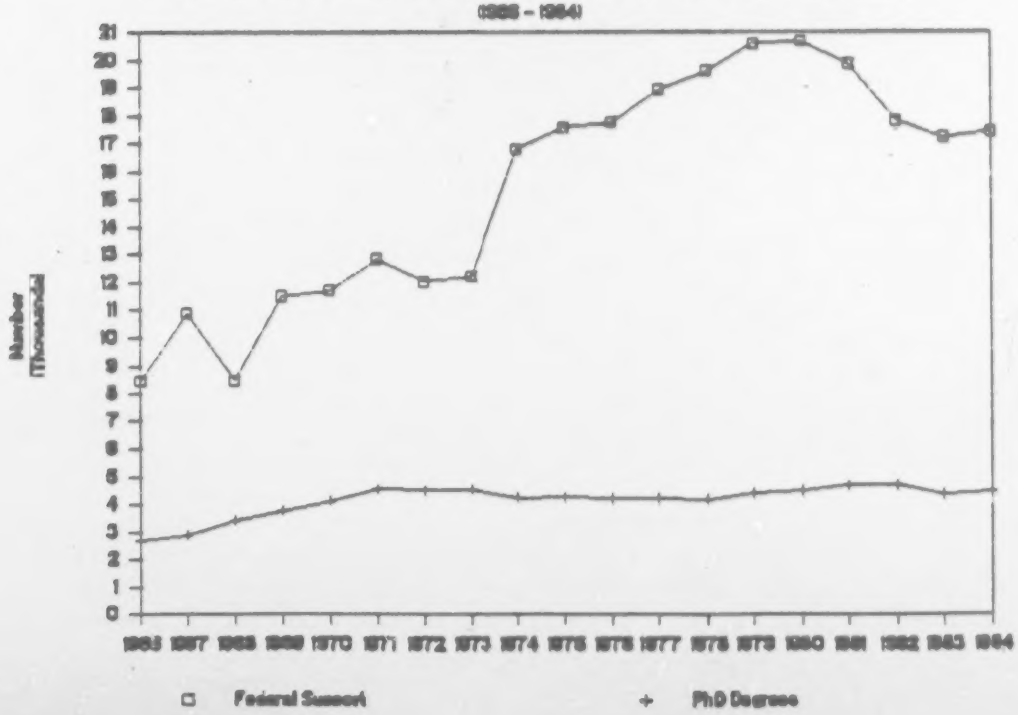
ENG S/E GRAD STUD W FED SUP & PhDs

(1966 - 1984)



LIFE SCI S/E GRAD STUD W FED SUP & PhDs

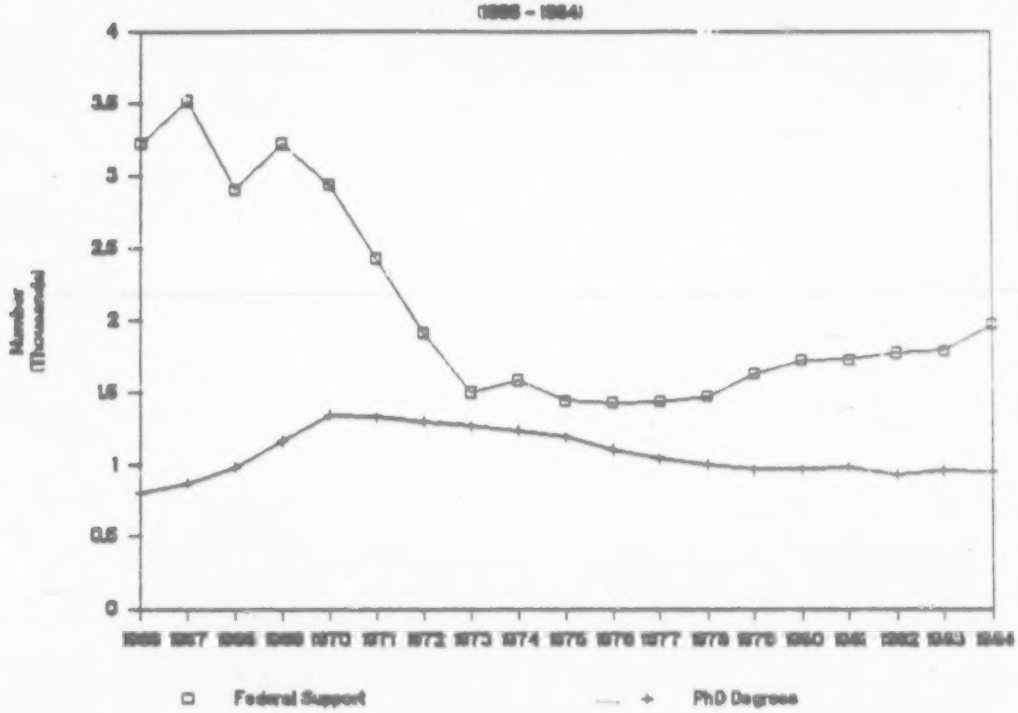
(1966 - 1984)



00045

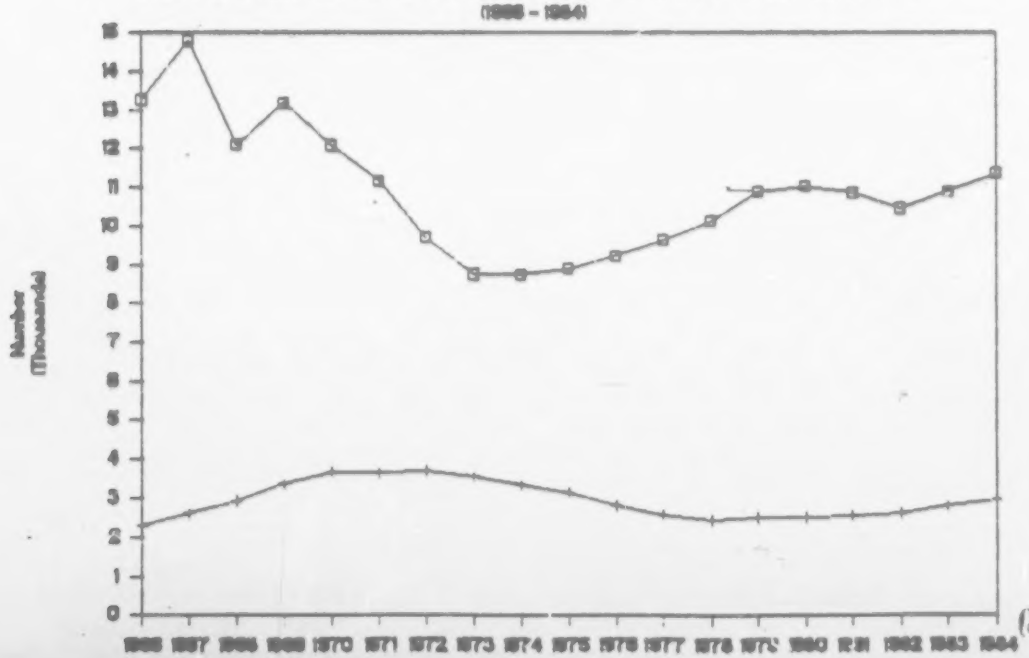
MATH/CS S/E GRAD STUD W FED SUP & PhDs

(1966 - 1984)



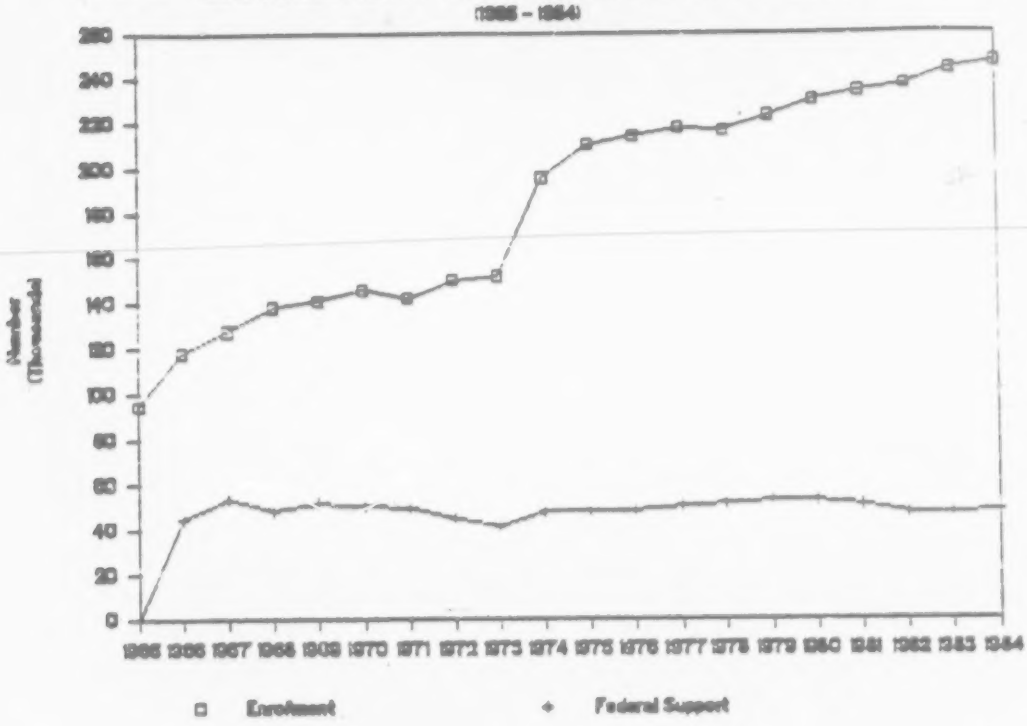
PHYS SCI S/E GRAD STUD W FED SUP & PhDs

(1966 - 1984)

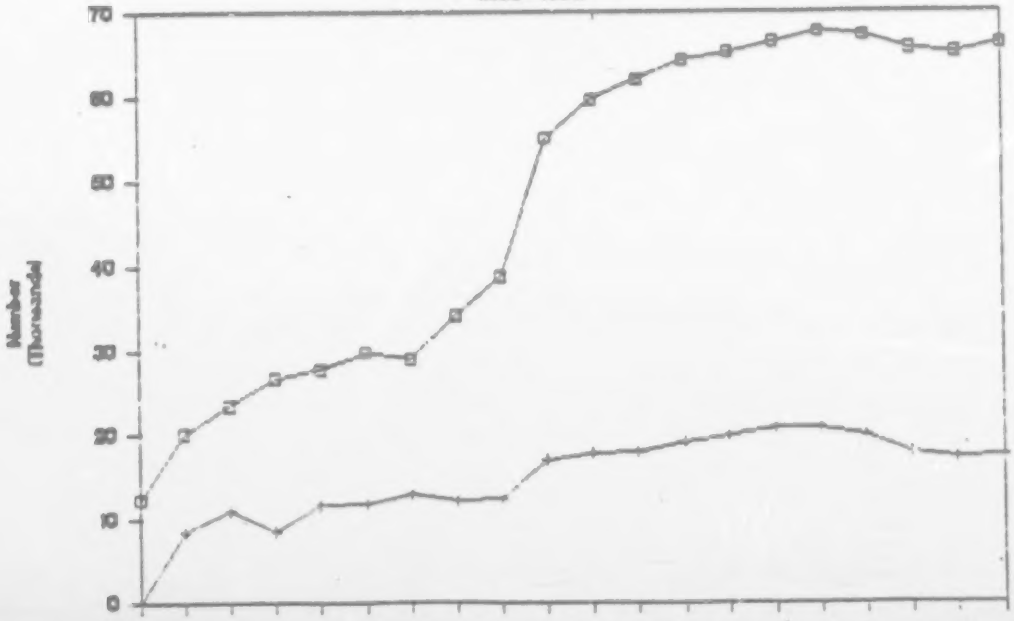


60 of 89

GRAD ENROLLMENT AND FEDERAL SUPPORT



LIFE SCIENCES ENROLLMENT AND FED SUP



LOOKING BACK FROM THE PHD

PRIMARY SOURCE OF SUPPORT BY SEX AND CITIZENSHIP

1977-1985

PRIMARY FEDERAL SUPPORT BY FIELD, SEX AND CITIZENSHIP

1977-1985

FEDERAL SUPPORT BY SEX AND CITIZENSHIP

1972-1985

I09,17,25,33,41,49,57,65,73,81,89,97,A5,B3.

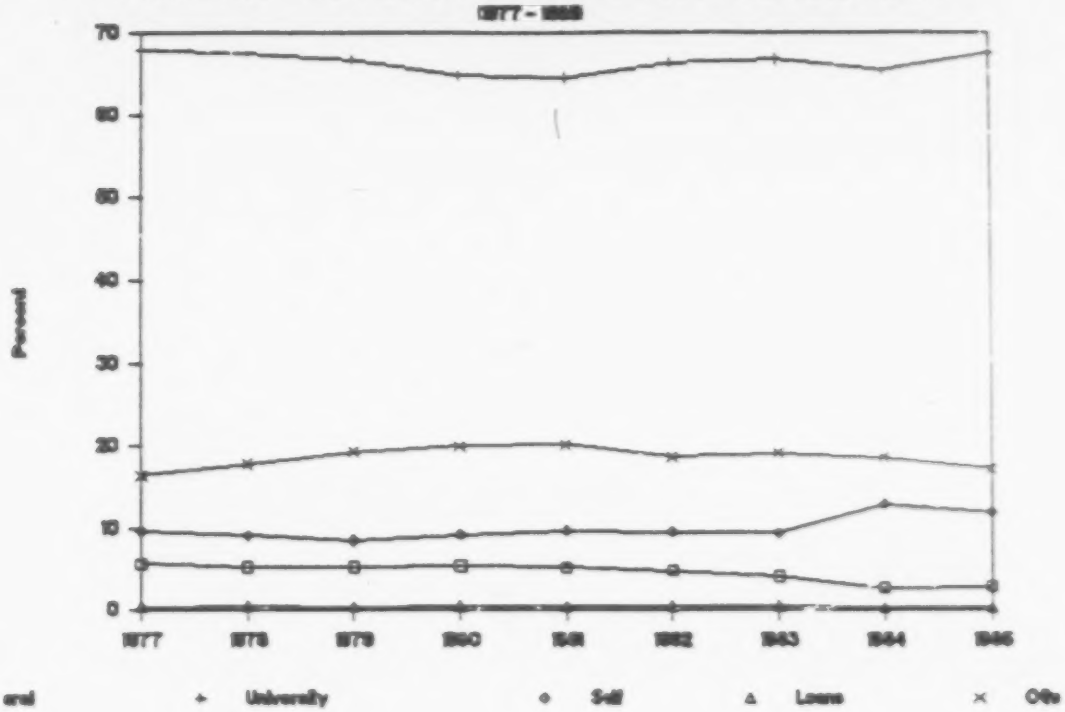
SOURCE OF PRIMARY SUPPORT OF S/E PhDs WHO REPORTED PRIMARY TYPE OF SUPPORT

Source	1977	1978	1979	1980	1981	1982	1983	1984	1985
Total S/E PhD	9540	14727	15288	15375	15829	15726	15976	15005	15349
Federal	1923	2804	2685	2646	2591	2412	2290	1721	1496
Univeristy	4940	8124	8483	8568	8799	9109	9293	8319	8894
Self	2032	2821	2997	3010	3160	2929	2997	3677	3606
Loans	60	111	143	173	213	258	330	301	341
Other	585	867	980	978	1066	1018	1066	987	1012
U.S. S/E PhDs	7609	11759	12222	12232	12450	12223	12211	11368	11277
Federal	1814	2649	2525	2475	2416	2242	2134	1623	1379
Univeristy	3629	6124	6441	6530	6619	6783	6779	5938	6139
Self	1846	2551	2737	2721	2833	2596	2641	3207	3120
Loans	52	95	130	156	196	239	310	290	328
Other	268	340	389	350	386	363	347	310	311
Foreign	1931	2968	3066	3143	3379	3503	3765	3637	4072
Federal	109	155	160	171	175	170	156	98	117
Univeristy	1311	2000	2042	2038	2180	2326	2514	2381	2755
Self	186	270	260	289	327	333	356	470	486
Loans	8	16	13	17	17	19	20	11	13
Other	317	527	591	628	680	655	719	677	701
U.S. S/E Wome	1519	2479	2798	3012	3186	3278	3545	3426	3407
Federal	428	636	634	675	641	672	682	548	467
Univeristy	608	1113	1235	1365	1410	1533	1649	1511	1611
Self	424	628	778	801	933	874	984	1154	1102
Loans	14	27	50	56	81	100	135	141	138
Other	45	75	101	115	121	99	95	72	89
U.S. S/E Men	8021	12248	12490	12363	12643	12448	12431	11579	11942
Federal	1495	2168	2051	1971	1950	1740	1608	1173	1029
Univeristy	4332	7011	7248	7203	7389	7576	7644	6808	7283
Self	1608	2193	2219	2209	2227	2055	2013	2523	2504
Loans	46	84	93	117	132	158	195	160	203
Other	540	792	879	863	745	919	971	915	923

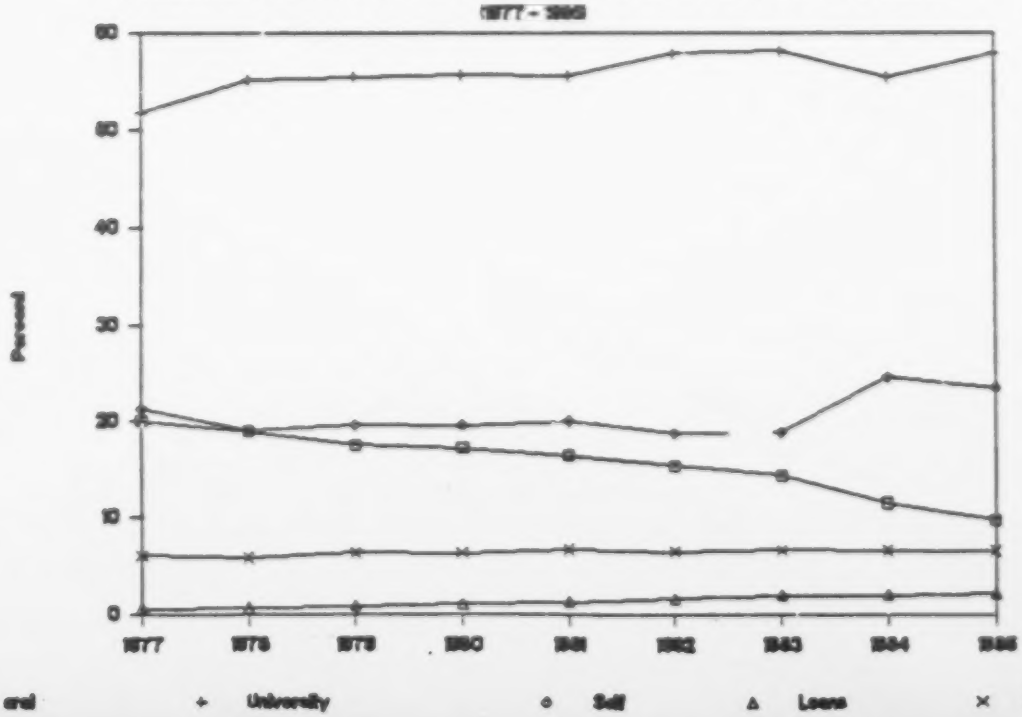
Source PERCENT SOURCE OF SUPPORT

Source	PERCENT SOURCE OF SUPPORT								
Total S/E PhDs									
Federal	20.2	19.0	17.6	17.2	16.4	15.3	14.3	11.5	9.7
Univeristy	51.8	55.2	55.5	55.7	55.6	57.9	58.2	55.4	57.9
Self	21.3	19.2	19.6	19.6	20.0	18.6	18.8	24.5	23.5
Loans	0.6	0.8	0.9	1.1	1.3	1.6	2.1	2.0	2.2
Other	6.1	5.9	5.4	6.4	6.7	6.5	6.7	6.6	6.6
U.S. S/E PhDs									
Federal	23.8	22.5	20.7	20.2	19.4	18.3	17.5	14.3	12.2
Univeristy	47.7	52.1	52.7	53.4	53.2	55.5	55.5	52.2	54.4
Self	24.3	21.7	22.4	22.2	22.8	21.2	21.6	28.2	27.7
Loans	0.7	0.8	1.1	1.3	1.6	2.0	2.5	2.6	2.9
Other	3.5	2.9	3.2	2.9	3.1	3.0	2.8	2.7	2.8
Foreign									
Federal	5.6	5.2	5.2	5.4	5.2	4.9	4.1	2.7	2.9
Univeristy	67.9	67.4	66.6	64.8	64.5	66.4	66.8	65.5	67.7
Self	9.6	9.1	8.5	9.2	9.7	9.5	9.5	12.9	11.9
Loans	0.4	0.5	0.4	0.5	0.5	0.5	0.5	0.3	0.3
Other	16.4	17.8	19.3	20.0	20.1	18.7	19.1	18.6	17.2
U.S. S/E Women									
Federal	28.2	25.7	22.7	22.4	20.1	20.5	19.2	16.0	13.7
Univeristy	40.0	44.9	44.1	45.3	44.3	46.8	46.5	44.1	47.3
Self	27.9	25.3	27.8	26.6	29.3	26.7	27.8	33.7	32.3
Loans	0.9	1.1	1.8	1.9	2.5	3.1	3.8	4.1	4.1
Other	3.0	3.0	3.6	3.8	3.8	3.0	2.7	2.1	2.6
U.S. S/E Men									
Federal	18.6	17.7	16.4	15.9	15.4	14.0	12.9	10.1	8.6
Univeristy	54.0	57.2	58.0	58.3	58.4	60.9	61.5	58.8	61.0
Self	20.0	17.9	17.8	17.9	17.6	16.5	16.2	21.8	21.0
Loans	0.6	0.7	0.7	0.9	1.0	1.3	1.6	1.4	1.7
Other	6.7	6.5	7.0	7.0	7.5	7.4	7.8	7.9	7.7

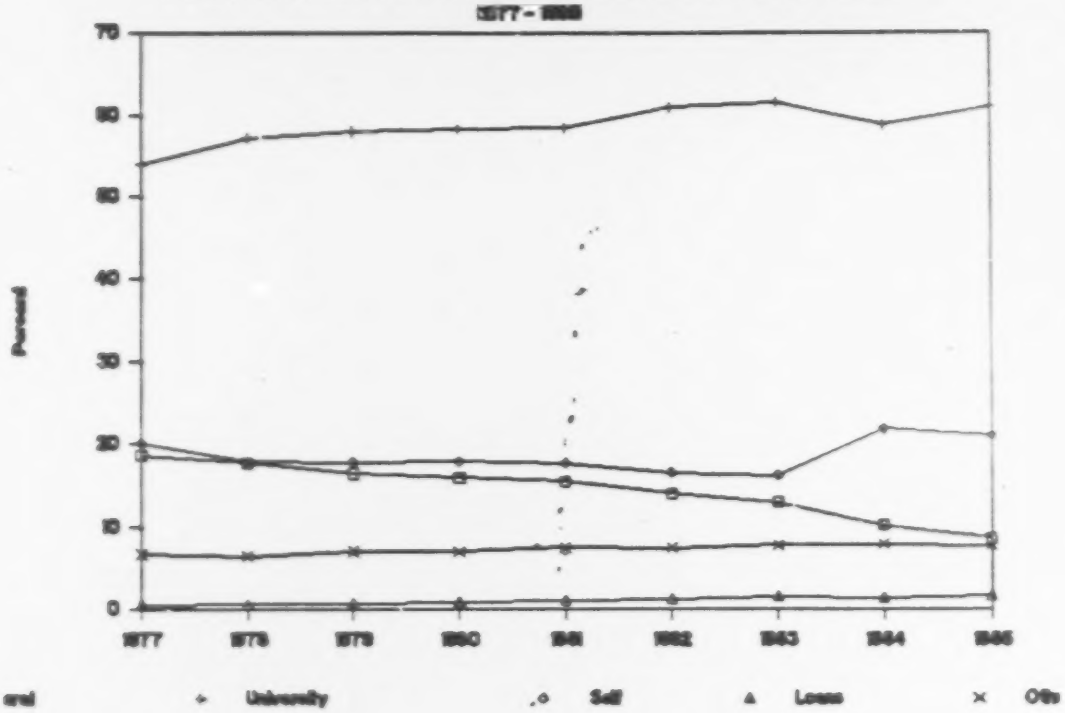
PRIMARY SUPPORT SOURCE FOR FOREIGN PhDs



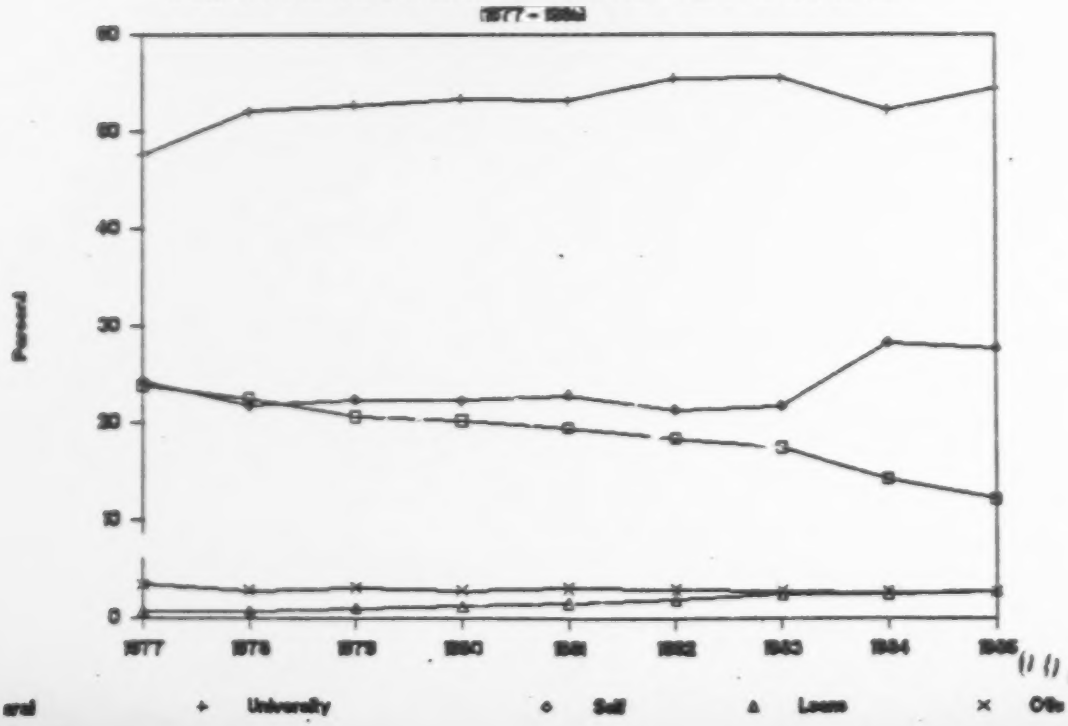
PRIMARY SUPPORT SOURCE FOR ALL S/E PhDs



PRIMARY SUPPORT SOURCE U.S. MEN PhDs

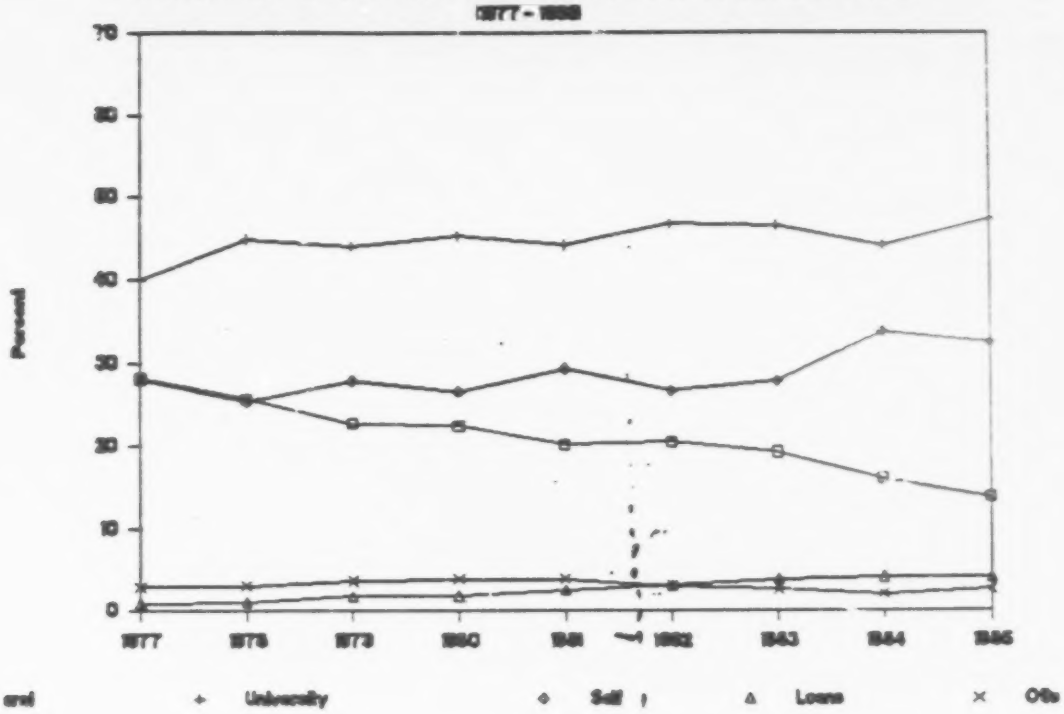


PRIMARY SUPPORT SOURCE ALL U.S. PhDs



00095

PRIMARY SUPPORT SOURCE U.S. WOMEN PhDs



NO. & % OF S/E PhDs REPORTING FEDERAL SUPPORT AS PRIMARY SOURCE BY FIELD

Field	1977	1978	1979	1980	1981	1982	1983	1984	1985
Total S/E	9540	14727	15288	15375	15829	15726	15976	15005	15349
Total w Fed Sup	1923	2804	2685	2646	2591	2412	2290	1721	1496
% W Fed Sup	20.2	19.0	17.6	17.2	16.4	15.3	14.3	11.5	9.7
No. Phys Sci	1887	2792	2967	2827	2877	3017	3116	2860	2989
W Fed Sup	244	294	301	317	323	301	288	201	158
% W Fed Sup	12.9	10.5	10.1	11.2	11.4	10.0	9.2	7.0	5.3
No. Engineering	1531	2095	2216	2202	2259	2313	2455	2400	2620
W Fed Sup	192	256	222	264	250	218	212	123	117
% W Fed Sup	12.4	12.2	10.0	12.0	11.1	9.4	8.6	5.1	4.5
No Math C/S	535	853	893	864	884	863	893	847	865
W Fed Sup	61	78	76	67	71	58	49	45	40
% W Fed Sup	11.4	9.1	8.5	7.8	8.0	6.7	5.5	5.3	4.6
No. EMP	3953	5740	6076	5893	6020	6193	6464	6107	6474
W Fed Sup	495	628	599	648	649	577	549	369	315
% W Fed Sup	12.5	10.9	9.9	11.0	10.8	9.3	8.5	6.0	4.9
No. Life Sci	2328	3895	4031	4271	4325	4407	4313	4098	4155
W Fed Sup	696	1105	1090	1099	1096	1113	1089	929	817
% W Fed Sup	29.9	28.4	27.0	25.7	25.3	25.3	25.2	22.7	19.7
No. Soc Sci	3259	5092	5181	5211	5484	5126	5199	4800	4720
W Fed Sup	732	1071	996	899	846	722	652	423	364
% W Fed Sup	22.5	21.0	19.2	17.3	15.4	14.1	12.5	8.8	7.7

I09,17,25,33,41,49,57,65,73,81,89,97,A5,B3.

NO. & % OF U.S. S/E PhDs REPORTING FEDERAL SUPPORT AS PRIMARY SOURCE BY FIELD

Field	1977	1978	1979	1980	1981	1982	1983	1984	1985
Total S/E	7609	11757	12222	12232	12450	12223	12211	11368	11277
Total w Fed Sup	1814	2649	2525	2475	2416	2242	2134	1623	1379
% W Fed Sup	23.8	22.5	20.7	20.2	19.4	18.3	17.5	14.3	12.2
No. Phys Sci	1496	2245	2394	2242	2277	2379	2413	2204	2234
W Fed Sup	224	270	269	278	294	271	258	183	143
% W Fed Sup	15.0	12.0	11.2	12.4	12.9	11.4	10.7	8.3	6.4
No. Engineering	915	1140	1215	1170	1117	1105	1101	1130	1163
W Fed Sup	163	212	186	209	198	158	155	106	94
% W Fed Sup	17.8	18.6	15.3	17.9	17.7	14.3	14.1	9.4	8.1
No Math C/S	413	651	682	642	627	581	567	530	528
W Fed Sup	58	75	74	62	66	55	45	44	39
% W Fed Sup	14.0	11.5	10.9	9.7	10.5	9.5	7.9	8.3	7.4
No. EMP	2824	4036	4291	4054	4021	4065	4081	3864	3925
W Fed Sup	445	557	529	549	558	484	458	333	276
% W Fed Sup	15.8	13.8	12.3	13.5	13.9	11.9	11.2	8.6	7.0
No. Life Sci	1919	3237	3389	3574	3644	3722	3613	3407	3372
W Fed Sup	655	1057	1045	1067	1049	1068	1046	894	769
% W Fed Sup	34.1	32.7	30.8	29.9	28.8	28.7	29.0	26.2	22.8
No. Soc Sci	2866	4484	4542	4604	4785	4436	4517	4097	3980
W Fed Sup	714	1035	951	859	809	690	630	396	334
% W Fed Sup	24.9	23.1	20.9	18.7	16.9	15.6	13.9	9.7	8.4

00038

NO. & % OF FOREIGN S/E PhDs REPORTING FEDERAL SUPPORT AS PRIMARY SOURCE BY FIELD

Field	1977	1978	1979	1980	1981	1982	1983	1984	1985
Total S/E	1931	2970	3066	3143	3379	3503	3765	3637	4072
Total w Fed Sup	109	155	160	171	175	170	156	98	117
% W Fed Sup	5.6	5.2	5.2	5.4	5.2	4.9	4.1	2.7	2.9
No. Phys Sci	391	547	573	585	600	638	703	656	755
W Fed Sup	20	24	32	39	34	30	30	18	15
% W Fed Sup	5.1	4.4	5.6	6.7	5.7	4.7	4.3	2.7	2.0
No. Engineering	616	955	1001	1032	1142	1208	1354	1270	1457
W Fed Sup	27	44	36	55	52	60	57	17	23
% W Fed Sup	4.4	4.6	3.6	5.3	4.6	5.0	4.2	1.3	1.6
No Math C/S	122	202	211	222	257	282	326	317	337
W Fed Sup	3	3	2	5	5	3	4	1	1
% W Fed Sup	2.5	1.5	0.9	2.3	1.9	1.1	1.2	0.3	0.3
No. EMP	1129	1704	1785	1839	1999	2128	2383	2243	2549
W Fed Sup	50	71	70	99	91	93	91	36	39
% W Fed Sup	4.4	4.2	3.9	5.4	4.6	4.4	3.8	1.6	1.5
No. Life Sci	409	658	642	697	681	685	700	691	783
W Fed Sup	41	48	45	32	47	45	43	35	48
% W Fed Sup	10.0	7.3	7.0	4.6	6.9	6.6	6.1	5.1	6.1
No. Soc Sci	393	608	639	607	699	690	682	703	740
W Fed Sup	18	36	45	40	37	32	22	27	30
% W Fed Sup	4.6	5.9	7.0	6.6	5.3	4.6	3.2	3.8	4.1

NO. & % OF U.S. WOMEN S/E PhDs REPORTING FEDERAL SUPPORT AS PRIMARY SOURCE BY FIELD

Field	1977	1978	1979	1980	1981	1982	1983	1984	1985
Total S/E	1519	2479	2798	3012	3186	3278	3545	3426	3407
Total w Fed Sup	428	636	634	675	641	672	682	548	467
% W Fed Sup	28.2	25.7	22.7	22.4	20.1	20.5	19.2	16.0	13.7
No. Phys Sci	128	212	241	266	254	336	347	345	366
W Fed Sup	22	20	25	38	22	33	43	34	30
% W Fed Sup	17.2	9.4	10.4	14.3	8.7	9.8	12.4	9.9	8.2
No. Engineering	26	22	36	58	49	68	79	78	109
W Fed Sup	6	3	4	6	6	10	14	8	6
% W Fed Sup	23.1	13.6	11.1	10.3	12.2	14.7	17.7	10.3	5.5
No Math C/S	50	92	114	86	98	86	98	94	86
W Fed Sup	0	8	8	4	5	6	5	4	6
% W Fed Sup	0.0	8.7	7.0	4.7	5.1	7.0	5.1	4.3	4.0
No. EMP	204	326	391	410	401	490	524	517	561
W Fed Sup	28	31	37	48	33	49	62	46	42
% W Fed Sup	13.7	9.5	9.5	11.7	8.2	10.0	11.8	8.9	4.0
No. Life Sci	397	714	795	896	964	1032	1098	1005	1032
W Fed Sup	162	272	265	298	310	341	357	302	260
% W Fed Sup	40.8	38.1	33.3	33.3	32.2	33.0	32.5	30.0	25.2
No. Soc Sci	918	1439	1612	1706	1821	1756	1923	1904	1814
W Fed Sup	238	333	332	329	298	282	263	200	165
% W Fed Sup	25.9	23.1	20.6	19.3	16.4	16.1	13.7	10.5	9.1

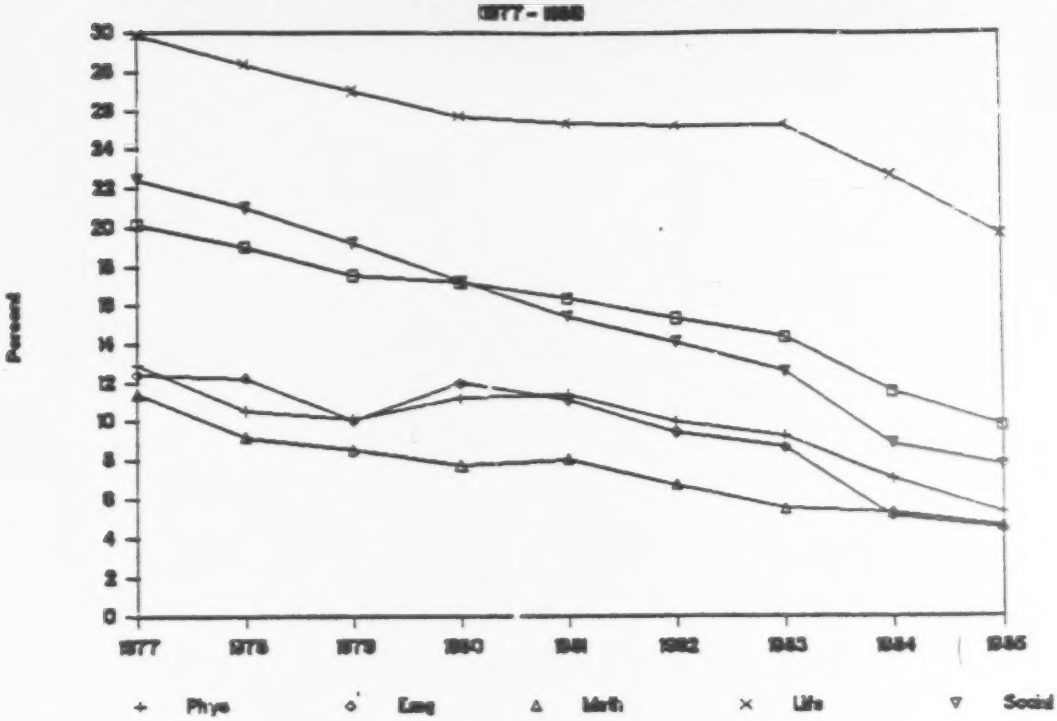
109,17,25,33,41,49,57,65,73,81,89,97,A5,B3.

NO. & % OF U.S. MEN S/E PhDs REPORTING FEDERAL SUPPORT AS PRIMARY SOURCE BY FIELD

Field	1977	1978	1979	1980	1981	1982	1983	1984	1985
Total S/E	6090	9278	9424	9220	9264	8945	8666	7942	7870
Total w Fed Sup	1386	2013	1891	1800	1775	1570	1452	1075	912
% W Fed Sup	22.8	21.7	20.1	19.5	19.2	17.6	16.8	13.5	11.6
No. Phys Sci	1368	2033	2153	1976	2023	2043	2066	1859	1868
W Fed Sup	202	250	244	240	272	238	215	149	113
% W Fed Sup	14.8	12.3	11.3	12.1	13.4	11.6	10.4	8.0	6.0
No. Engineering	889	1118	1179	1112	1068	1037	1022	1052	1054
W Fed Sup	157	209	182	203	192	148	141	98	88
% W Fed Sup	17.7	18.7	15.4	18.3	18.0	14.3	13.8	9.3	8.3
No Math C/S	363	559	568	556	529	495	469	436	442
W Fed Sup	58	67	66	58	61	49	40	40	33
% W Fed Sup	16.0	12.0	11.6	10.4	11.5	9.9	8.5	9.2	4.0
No. EMP	2620	3710	3900	3644	3620	3575	3557	3347	3364
W Fed Sup	417	526	492	501	525	435	396	287	234
% W Fed Sup	15.9	14.2	12.6	13.7	14.5	12.2	11.1	8.6	4.0
No. Life Sci	1522	2523	2594	2678	2680	2690	2515	2402	2340
W Fed Sup	493	785	780	769	739	727	689	592	509
% W Fed Sup	32.4	31.1	30.1	28.7	27.6	27.0	27.4	24.6	21.8
No. Soc Sci	1948	3045	2930	2898	2964	2680	2594	2193	2166
W Fed Sup	476	702	619	530	511	408	367	196	169
% W Fed Sup	24.4	23.1	21.1	18.3	17.2	15.2	14.1	8.9	7.8

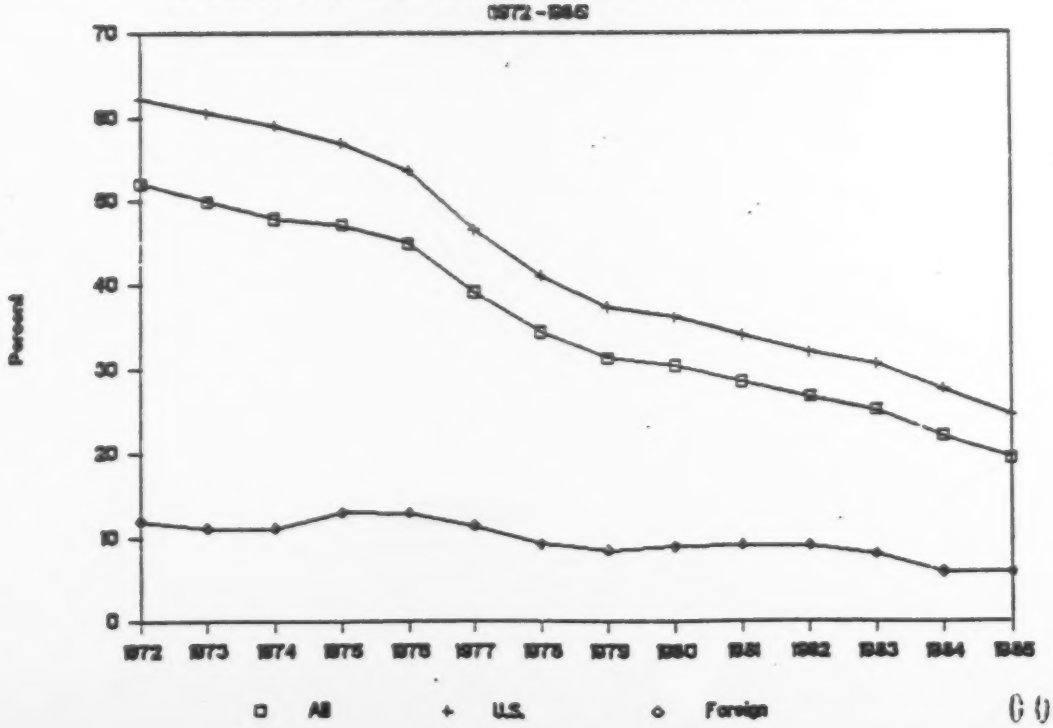
% S/E PhDs WITH PRIMARY SUPPORT FEDERAL

1977 - 1985

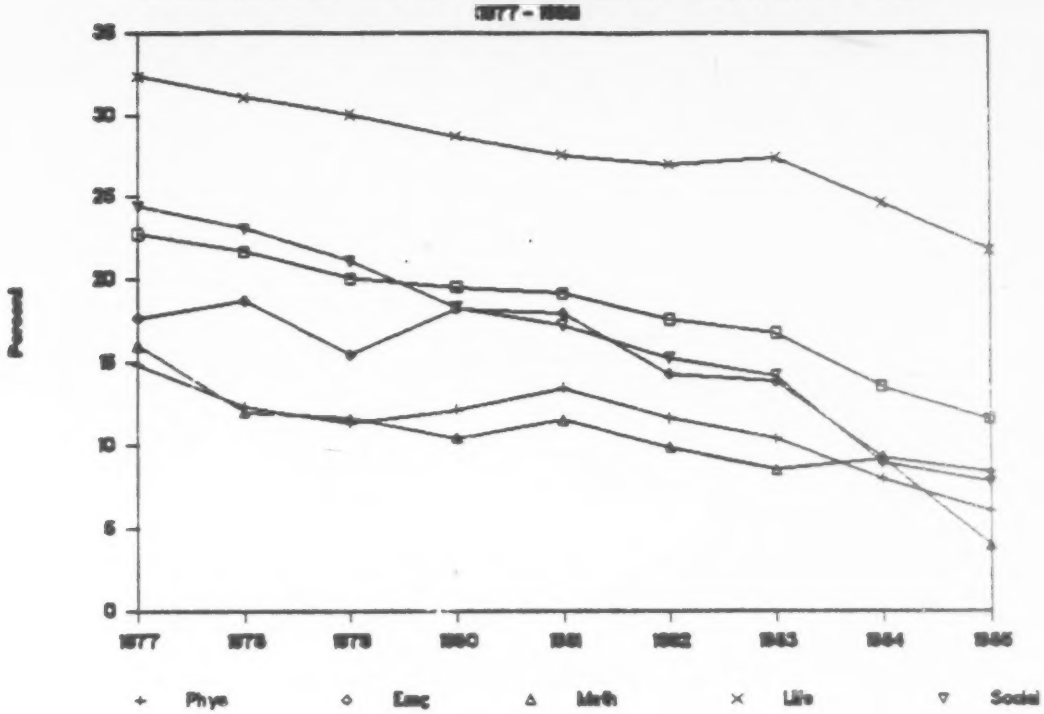


% ALL, U.S. & FOREIGN PhDs WITH FED SUP

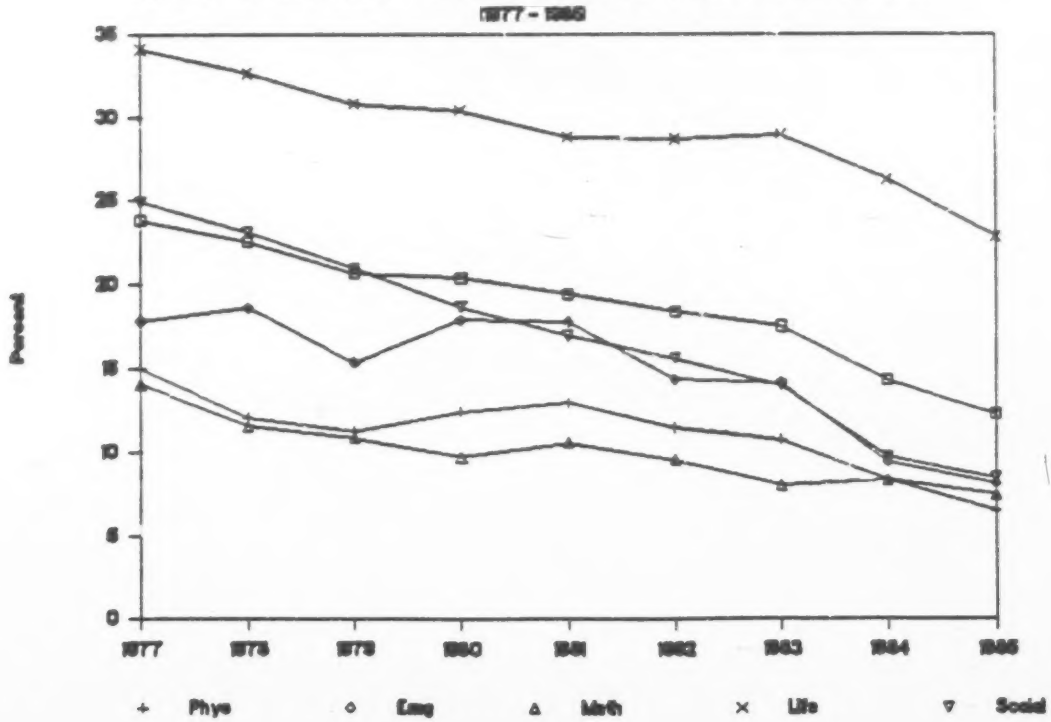
1972 - 1985



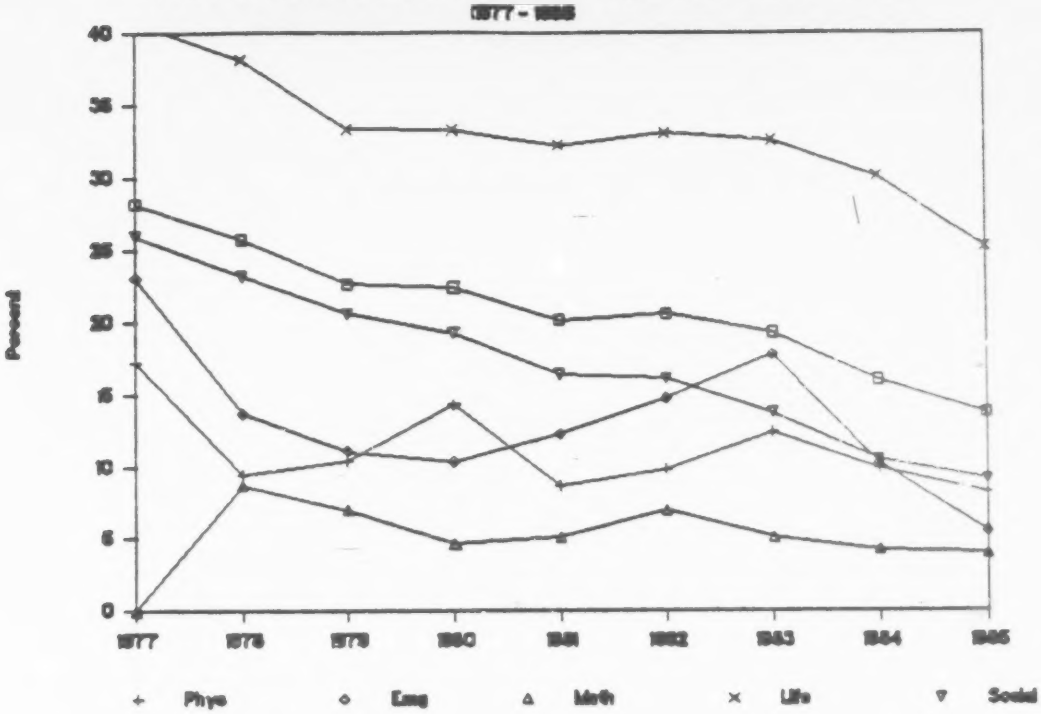
% US MEN S/E PhDs - PRIMARY SUPPORT FED



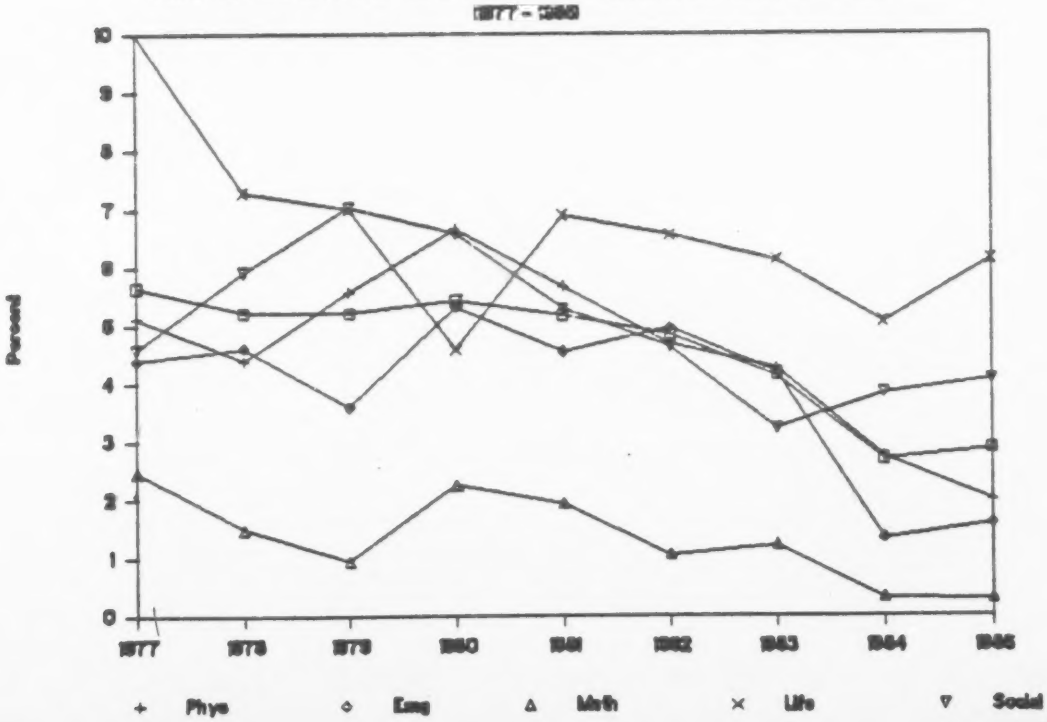
% US S/E PhDs - PRIMARY SUPPORT FEDERAL



% US WOMEN S/E PhDs - PRIMARY SUPP FED



% FOREIGN S/E PhDs - PRIMARY SUPP FED

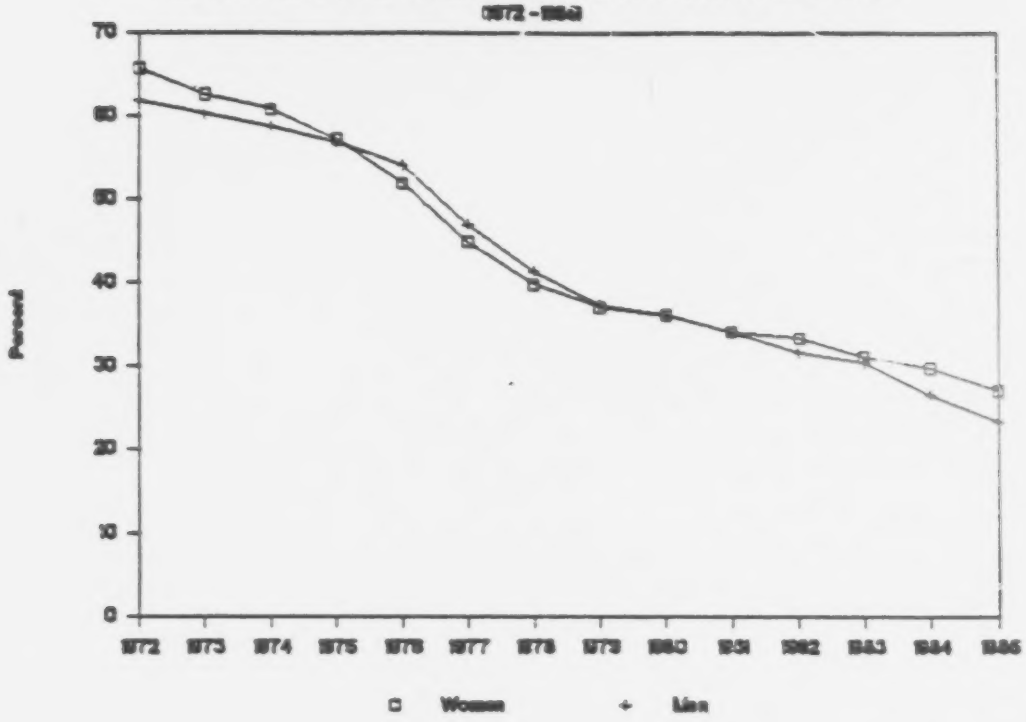


109,17,25,33,4[illegible]9,57,65,73,81,89,97,45,83.

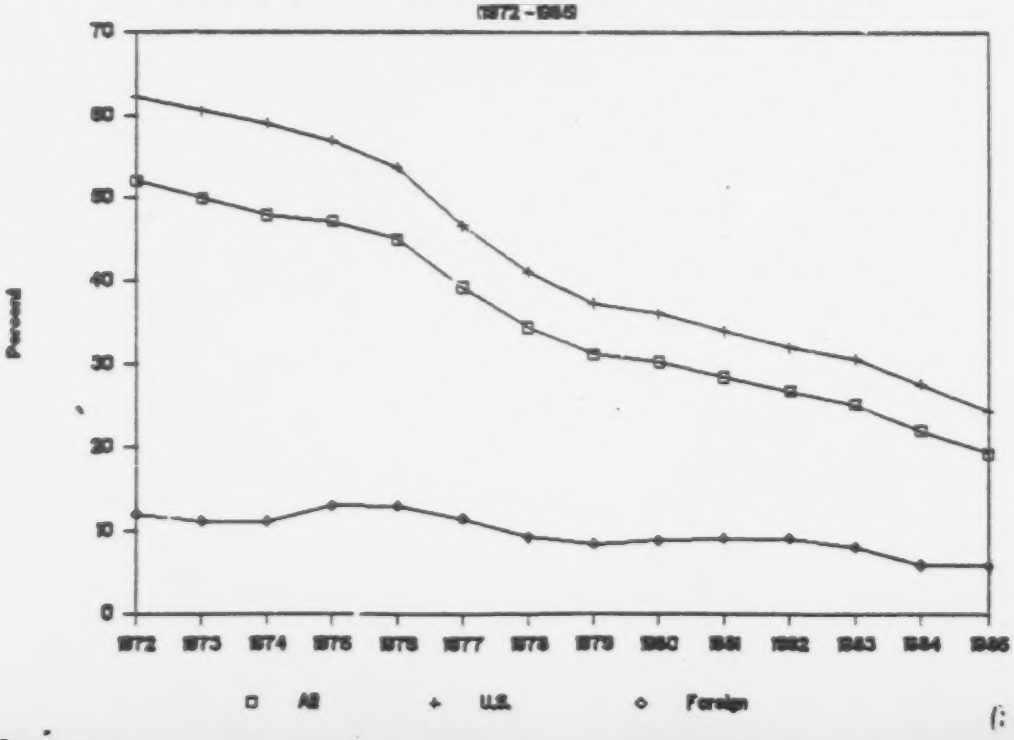
PhD RECIPIENTS REPORTING ANY FEDERAL SUPPORT AS GRADUATE STUDENTS

Year	All PhDs Total	All PhDs W Sup	All PhDs Fed Sup	All PhDs % F Sup	U.S. Total	U.S. W Sup	U.S. Fed Sup	U.S. % F Sup	U.S. Women Total	U.S. Women W Sup	U.S. Women Fed Sup	U.S. Women % F Sup	Foreign Total	Foreign W Sup	Foreign Fed Sup	Foreign % F Sup	Citizenship Unknown Total	Citizenship Unknown W Sup	Citizenship Unknown Fed Sup	Citizenship Unknown % F Sup	U.S. Men Total	U.S. Men W Sup	U.S. Men Fed Sup	U.S. Men % F Sup
1967	12982	8005	3528	44.1																				
1968	14448	13520	6216	46.0																				
1969	16039	15379	7898	51.4																				
1970	17743	17177	9004	52.4																				
1971	18949	18208	9778	53.7																				
1972	19007	18183	947[illegible]	52.1	14907	14521	9037	62.2	1735	1673	1098	65.6	3770	3643	435	11.9	330	19	7	36.8	13172	12848	7939	61.8
1973	19001	18128	906	50.0	14683	14235	8622	60.6	2048	1964	1229	62.6	3976	3861	429	11.1	342	32	15	46.9	12635	12271	7393	60.2
1974	18313	16840	8079	48.0	13458	12930	7633	59.0	2098	2004	1217	60.7	4167	3881	433	11.2	688	29	13	44.8	11360	10926	6416	58.7
1975	18358	17603	8310	47.2	14015	13691	7796	56.9	2411	2352	1346	57.2	4078	3888	505	13.0	265	24	9	37.5	11604	11339	6450	56.9
1976	17864	17177	7731	45.0	13773	13496	7252	53.7	2535	2480	1289	52.0	3775	3652	472	12.9	316	29	7	24.1	11238	11016	5963	54.1
1977	17417	16629	6523	39.2	13407	13120	6116	46.6	2628	2570	1155	44.9	3581	3464	393	11.3	429	45	14	31.1	10779	10550	4961	47.0
1978	17048	16163	5547	34.3	13086	12755	5233	41.0	2792	2709	1078	39.8	3476	3377	307	9.1	486	31	7	22.6	10294	10046	4155	41.4
1979	17245	16411	5118	31.2	13257	12957	4827	37.3	3044	2984	1106	37.1	3533	3432	288	8.4	455	22	3	13.6	10213	9973	3721	37.3
1980	17199	16361	4947	30.2	13179	12879	4640	36.0	3271	3203	1156	36.1	3578	3468	304	8.8	442	14	3	21.4	9908	9676	3484	36.0
1981	17633	16735	4765	28.5	13298	13030	4427	34.0	3414	3349	1139	34.0	3768	3674	333	9.1	567	31	5	16.1	9884	9681	3288	34.0
1982	17625	16619	4445	26.7	13021	12780	4091	32.0	3533	3456	1150	33.3	3885	3785	342	9.0	719	54	12	22.2	9488	9324	2941	31.5
1983	17931	16949	4257	25.1	13085	12822	3921	30.6	3822	3737	1161	31.1	4204	4087	329	8.0	642	40	7	17.5	9263	9085	2760	30.4
1984	18075	17099	3768	22.0	12957	12750	3509	27.5	3852	3800	1131	29.8	4424	4312	254	5.9	694	37	5	13.5	9105	8950	2378	26.6
1985	18261	17164	3317	19.3	12642	12437	3039	24.4	3800	3741	1010	27.0	4860	4715	275	5.8	759	12	3	25.0	8842	8696	2029	23.3
Total	331138	310350	121776	39.2	188768	184403	80143	43.5	40983	40022	16265	40.6	55075	53239	5099	9.6	7134	419	110	26.3	147785	144381	63878	44.2

% U.S. MEN & WOMEN PhDs WITH FED SUP



% ALL, U.S. & FOREIGN PhDs WITH FED SUP



600206

POSTDOCTORATES IN ACADEMIC INSTITUTIONS

1965-1984

FEDERAL SUPPORT OF POSTDOCTORATES

1973-1984

600207

I09,17,25,33,41,49,57,65,73,81,89,97,A5,B3.

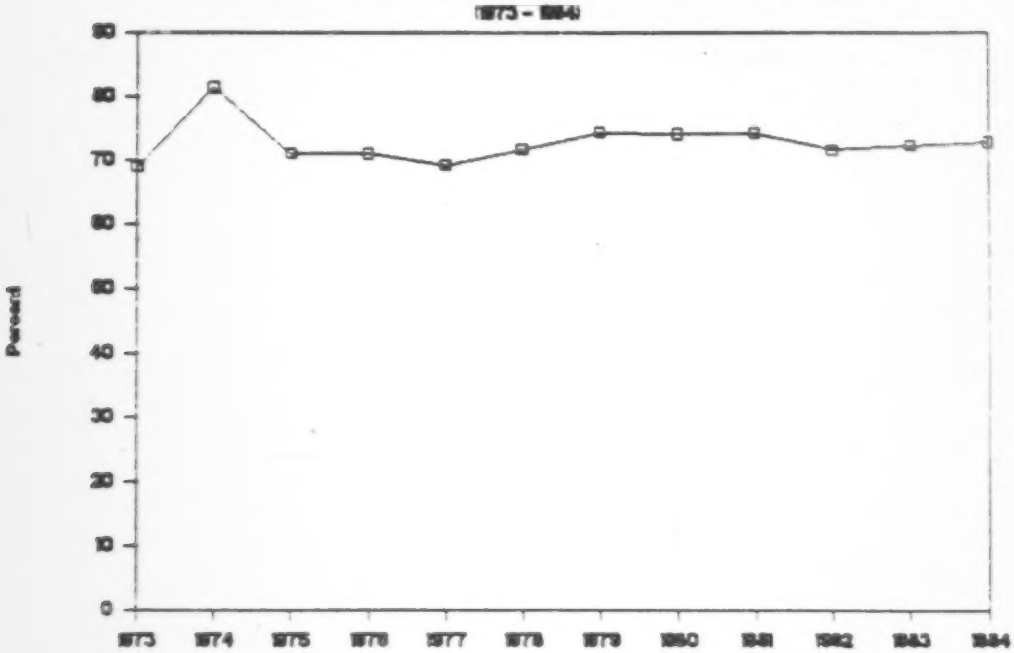
FEDERAL SUPPORT OF POSTDOCTORATES

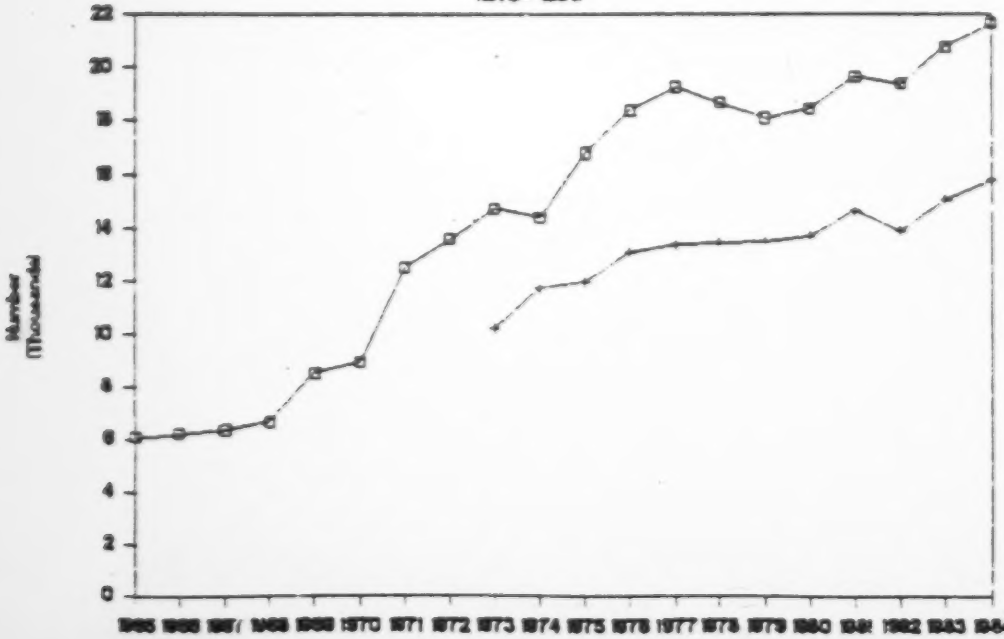
YEAR	TOTAL	FED SUP	% FED SUP
1965	6104		
1966	6268		
1967	6408		
1968	6683		
1969	5517		
1970	8940		
1971	12506		
1972	13557		
1973	14708	10156	69.1
1974	14333	11683	81.5
1975	16755	11914	71.1
1976	18381	13056	71.0
1977	19252	13328	69.2
1978	18669	13395	71.7
1979	18086	13461	74.4
1980	18411	13657	74.2
1981	19646	14592	74.3
1982	19366	13864	71.6
1983	20762	15028	72.4
1984	21666	15797	72.9

Note: 1978 data are interpolated

% POST DOCS WITH FEDERAL SUPPORT

(1973 - 1984)



NUMBER POST DOCS WITH FEDERAL SUPPORT

(1973 - 1984)